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THE COURSE OF STUDY

A MONTHLY PUBLICATION FOR TEACHERS AND PARENTS

The Plan and Purpose of the Chicago Institute

President Francis W. Parker

IN ORDER to determine properly the position assumed by the Chicago Institute in matters pertaining to popular education, and to make its aims and plans more intelligible, it is necessary to consider carefully the ideal which shapes and controls the proposed work. The following statements are prepared, therefore, for all those who are interested in popular education. Especially are they intended for parents who desire to give their children superior advantages in self-development, and for those teachers who wish to avail themselves of such opportunities as the school affords.

Educational methods are dominated mainly by one or the other of two diametrically opposed ideals: the one, the prevailing ideal of knowledge* and skill as the central purpose of education; the other, the ideal of character, embodied in citizenship, community life, complete living. The former demands the acquirement of certain stated quantities of knowledge, the amount and value of which are determined at intervals by examinations and estimated in per cents.

An ideal determines and controls all methods and means that go into its realization. Under that of knowledge, pupils and teachers concentrate their energies upon the learning of the pages of books, upon certain facts, rules, definitions, processes, and manual skill. The examination, the promotion, and the diploma lead the way, and the essentials of complete living are left in abeyance or to accident. The evils naturally growing out of such ideals are often relieved, however, by the presence of a child-loving, sympathetic teacher, whose personality is superior to defective methods.

The reason why there have been so few student-teachers engaged in constantly studying the child and his needs is that knowledge-gaining requires but few methods; that drill has been the rule, and teaching the exception. There is no "vista of fair things before," no continuous incentive to study, to a school-keeper wrestling with words and high per cents. The cramming process leads to the *en bloc* treatment of children. They are required to learn the same words, to submit to the same examinations, and are promoted at the same time. In the struggle the weak despair, the strong become conceited, and few indeed are educated.

These facts, relieved by many ameliorating circumstances, fairly show the education for which the State spends its millions,

*Lest any one should interpret these statements as a depreciation of knowledge, it may be well to add that such an inference is in utter opposition to the writer's intention. It goes without saying that knowledge is as essential to the mind as food, blood, and breath are to the body. Knowledge is mental nutrition, upon which all human action depends. But there is a vast difference between storing up facts for future uses unknown and unappreciated by the pupil, and acquiring knowledge under the incentive of immediate use. Knowledge as an end, or learning for the sake of learning, puts knowledge at its lowest value, while knowledge for expression, use, helpfulness, glorifies learning by making it a personal necessity.

and which furnishes the early training for the citizens of our public.

That character is the noblest outcome of human life is the opinion of all mankind. Codes of ethics, giving common rules of conduct, differ but little from each other. How, then, since character is prized as the intrinsic thing in life, have we so far lost sight of it in education?

It is far easier to follow conventional methods, tracks laid down in the remote past, than it is to break through the bounds set by tradition, and enter into a new light and a new life. The people do not readily change that which has been wrought in them by all the past. The circumstances of our government and society have been unfavorable to the radical changes here proposed. Ideal education into citizenship, until within a few years, has not been possible, even in our own country. The theory of character as the ideal in education is plain, simple, and universally recognized. The practice of the theory, however, requires a decided change in public opinion as to the nature of school work, and above all a radical change in the use of knowledge in the schoolroom.

The ideal school is an ideal community. An ideal community is a democracy, in the purest sense of that pregnant word. Character, constantly realizing itself in citizenship, in community life, in complete living, is the immediate, everlasting, and only purpose of the school. A day filled with refreshing life mirrors the new ideal.

The Chicago Institute has been founded to meet the growing demands for educated, efficient teachers and leaders in all grades of both public and private schools. The purpose of the Academic School is to demonstrate the value of character as the one end and aim of education. While not committed to the defense of any fixed educational creed or dogma, it is the intention to base the work upon the proposition that character, immediately expressing itself in terms of citizenship, of community life, of society in its best sense, in short, that complete living is the one aim and end of education for American children. This grows out of a belief:

1. That the knowledge acquired through an understanding of its immediate value and use in society is incomparably better than that gained by making the knowledge an end in itself.

2. That the true ideal of community life brings all the human energies into full play and righteous exercise.

3. That order, harmony, and brotherly love grow from within and develop under proper environment and inspiration into spiritual life; that these inherent attributes become organized in character as necessities derived from the relationship of the outer demand to the inner needs.

4. That present good is everlasting good. The citizenship of to-day, if good, becomes better to-morrow.

5. That the duties of citizenship should become life habits. Thinking, working, and doing for others cultivates those qualities, the lack of which now threatens our existence as a republic.

6. That if time and toil are to attain the highest possible results, there must be the greatest economy of effort.

7. That the right environment of the child brings the good in him into full activity and allows the bad to die of disuse.

8. That through a proper development of selfhood the tendency to selfishness may be banished.

9. That every child, through the use of his knowledge and skill in the help of others, may feel at once and always the highest purpose of life and living.

10. That such an education is absolutely moral in its every step of development.

Educative concentration is the bringing to bear of all proper means to realize character in complete living. Knowledge-gaining as an end dissipates the energies of a teacher and of a faculty, but character as the ideal concentrates and unites them. Concentration in this sense leads to the search for that knowledge which best nourishes the activities of the child at every stage—for that knowledge needed for use, which is usable at every step and becomes everlasting in its use.

Knowledge is glorified by its function. What blood and breath are to the body, that is knowledge to the spiritual life—not an end, but an intrinsic means. One question is ever before the teacher, Is the pupil made better through the use of his knowledge and skill?

Correlation is the inevitable outcome of concentration; it is the universal rule in all affairs except in education. The architect, for example, puts into the edifice all things in their proper place and proportion; brick, mortar, iron, stone, wood, and glass go where they are needed. But in the ordinary school the materials designed for the social structure are tumbled together in a promiscuous heap.

Since concentration and correlation are fundamental doctrines of the new school, it is proper to indicate in some detail how the work planned for the institution will be organized so that the children and older students may have the best means of developing their bodies and minds in educative play and work.

The Faculty In the outset it is recognized that the intrinsic worth of any school lies in the quality of the work done by its teachers. It is the design of the Chicago Institute to bring together experts in the profession of teaching. The faculty will form a compact organization for the purpose of studying together the practical problems derived from modern educational needs, and of applying the results of their study in the actual work of the classroom.

The head of each department will have charge of the psychology and pedagogy of his subject. Every teacher is to contribute toward the realization of the ideal of the school all he is, all he knows, and all he can do. He is to penetrate the whole faculty with his ideas, demonstrating in theory and in practice the educational use of his subject and its relations to all other subjects taught. Such investigations will have in view the gradual development of an American policy in education, under which may be realized the highest ideals of life in the republic.

The majority of the teachers selected have been members of the faculty of the Cook County and Chicago Normal School, some of them for a period of ten years or more.

General Plan It is proposed, therefore, to devote much attention to all the problems relating to social life, to instruction, and to school management, which arise in work done in the elementary, grammar, and secondary departments of the Academic School; to study the child and supply his needs, and in doing so to cultivate in him the highest ideals of which he is capable.

Under the domination of mediæval ideas and methods, the outcome of social and governmental conditions very different from our own, the school life of the child is often barren and empty. It is entirely reasonable that life from the beginning should be full and rich; that it should be full of work and play, and rich with the best that society can bring. Ordinarily, the child has two streams of thought, one rising in the home and the other in the school. These streams rarely join, but flow in parallel lines, the one full of bounding life and absorbing interest,

the other weak, fluctuating, and often interrupted or obscured by the volume and genuine vigor of the former. The reason for this is that school life, as a rule unnatural and abnormal, does not appeal to the best instincts and intuitions.

Education into freedom implies a recognition of the pupil's right to the privilege of initiative. Because of this, it is sometimes charged that the new education believes in merely amusing children by truckling to whims. There could be no greater mistake. Play and amusement are educative, and deserve a place; but the new education recognizes educative work as being something different, but absolutely essential to true and healthful growth. It merely proposes thas the pupil, first and last, shall acquire in a natural manner, and shall constantly deal with, images of genuine value. Such images are essential because they always create a desire in the pupil to put himself into life, and they drive him into an immediate attempt to do so. The school environment, therefore, should arouse in the child that which is best. As a member of a co-operative community in which each little citizen feels himself to be influential, the child is led to become a student of the best interests of all.

Subject-Matter for Study There are two main subjects of study—man and nature. The two are really one in the realm of creation. There are no dividing lines across this domain, except those drawn by man, sometimes for convenience, but more often through ignorance and conceit. Subjects have been classified and isolated in the past under the ideal of making knowledge the end of education. Under the character ideal they are correlated, and science, geography, and history, and all that they include, are really one. Each study is thus made to enhance all the others. The child begins no new subject, for subjects are always new; nor does he ever drop a subject because it is old. One step leads to another, and the answer to one question becomes the opening to a new one. The child finds for himself every possible thing, and his investigations are encouraged.

What Shall Children Study? All thinking which represents growing life has its infinite source in the study of man and nature. The child begins with eager observations in the home and in society, in the fields and the woods. These fill his growing mind with activity; he learns, imitates, originates; he enters school with senses in full tide of action. With mind healthy and ready for knowledge and expression, shall the environment of the child be changed radically from a natural to an artificial one? Shall his real life be cast aside, and his thoughts and his knowledge be left in abeyance? Or, shall the teacher use what the child is and what he can do in the further expansion, enrichment, and interpretation of his natural environment? As to this, in theory at least there seems to be no question. The child should have that which he can apprehend, assimilate, and use. The school which he enters should be a broader and deeper life. Stimulated by companionship and by social demands, directed by his teacher, his soul longs for that knowledge which he can use for the good of others.

What shall be the source of his nourishment? That knowledge which is related to what he already has and what he needs for immediate use. Such knowledge alone is nutritious. As his senses develop and his powers unfold, the pupil's observation improves. In school the subjects of man and nature must be continued, and should be made more educative, because the teacher is there. The child must feel that all he has ever learned, all he has

ever done well, is a part of his education; that he is learning at home when he is helping his mother, doing work that makes home more comfortable, happier, and better. Home life and school life thus become one in direction and purpose.

On the other hand, in expressing himself, in realizing himself in his attempts to put himself into life, the pupil must make use of all the means that have yet been devised by the race. The different modes of expression have no mental or moral value in themselves. Everything depends upon mental activities aroused by these processes. They may be used as forms, and as forms alone. They may express low, vicious thought, or they may be means of developing by their action and reaction the highest and best thinking. The different subjects of study, therefore, are all absolutely essential to the child's development.

The answer to the question, then, What will the children study in the new school? is very simple: Everything they study anywhere else. There may be a vast difference, however, in the manner and in the purpose of the study.

Reading The pupils will use reading from beginning to end, for reading is one of the chief means of developing educative thought. Without reading there can be but little progress in education. But instead of spending weeks and months and years in learning the formal part of reading for the sake of reading, with little or no thought, the child learns to read when the printed words best help him in thinking. Behind the purely formal reading there is little or no thought; the incentive is small, the interest slight, and the purpose feeble. The impelling power is left out, and, therefore, learning to read is made long and tedious. It has been found that children can learn to read as they learn to talk, and we know they talk when they have something to say. Instead, then, of the child's being plunged into a labyrinth of empty words, his mind is aroused and quickened by vital, interesting thought in science, geography, and history, and out of these in a perfectly natural way come the learning to read and the reading.

Writing All writing should express educative thought, and that this may be unobstructed, the pen must move with perfect ease and freedom. Correct writing includes spelling, grammar, capitalization, and punctuation. Instead of learning the formal rules and definitions of grammar as a preliminary, the child should use language continually in writing and speaking. Spelling, as well as capitalization and punctuation, is learned by expressing thought correctly. He learns the correct forms of language by using them. He cultivates style while writing under the criticism and correction of the teacher. Writing may be used, therefore, from the beginning as a direct means of thinking.

Mathematics The whole universe is undergoing incessant changes. From the smallest that momentarily occur to those that may be spanned only by infinite lapses of time, the presence of force is suggested and implied. The study of nature becomes eventually the study of force, and this can be imaged only by the aid of mathematics. Furthermore, it is by this means alone that the industrial and commercial relations of man can be properly determined and permanently established. Environed, therefore, by a life whose facts and phenomena must be constantly numbered and measured, as the pupil is permitted to become a real partaker in that life, there will be less and less excuse for his time being so completely absorbed by meaningless problems, by the thousand and one devices, mere tricks of the hour, that fill the arithmetics now in use in the schools. The old traditions of arithmetic-teaching, which deal mostly with the nature

of processes, possess the schools, and hold the minds of most men as in a vise, and cannot be gotten rid of in a day. But mathematics should be treated from the beginning as a means of enhancing thought that is worth the thinking in the immediate present.

What is said of mathematics in general may be asserted of all its divisions. In the proper study of form, and in the determination of relations, the elements of geometry and algebra take an important place in early education.

Art Art is doing well anything that is worth doing. The great saying, "He that doeth the will shall know of the doctrine," is fundamental in education. There must be actual and effective expression of thought through the bodily agents. Form is a universal means of manifesting thought. Through form we study energy, but form is a means, not an end. Modeling is a direct means of the study of form in all subjects. Color is the emphasis and ornament of form, and painting offers the best means of studying it. It is a study of form through tints and shades. Drawing requires the analysis of form. Art will have a great place in the new school.

Manual Training Every nerve center in the body demands manual training. It develops the mind and at the same time strengthens purpose, for all things made should enter into the life of the little community and into the life of the home. Children delight in manual training, because they love to make things, and to make them for others. The children will enter manual training in the kindergarten and carry it through all the grades.

Physical Culture The health and vigor of the children and of the students is all-important. A strong, supple body in which all the organs perfectly perform their functions; a body that feeds the brain with blood for the highest thought and complete action; a body under the domination of the will and readily responsive to it; a body that wards off or conquers disease, and makes the highest and most prolonged self-activity possible—such a body is the sure foundation of all that is good and right. Physical exercise in the gymnasium and out in the free air, in concerted work, and in individual and corrective movements, is to be the basis of the bodily refreshment of the school. Sports and games bring children close together in wholesome rivalry and hearty sympathy. Educative play banishes class distinctions, and the individual stands out for what he is really worth. All the exercises of the school are to be made essentially conducive to health and personal vigor.

Music and Speech The child enters school with gestures in full play, with a certain command of speech, and often with some skill in music. These modes of expression have been acquired spontaneously in meeting the needs and instincts of the child. Dramatic speech and music have a prominent place in expressing the emotional nature, but they, as well as all other modes of expression, are worthless unless they represent the actual feelings and experiences of the children.

Modern and Ancient Languages Language furnishes one of the fundamental means by which a nation may be studied; it shows in itself the thought-action of a people. Modern and ancient languages will have an important place in the Chicago Institute. "A modern language," says Richter, "is the mirror in which you see your own language." When the time comes for a child to learn a foreign language, he will learn it by speaking and reading it, just as he learns English. Speaking and reading will not cease at the end of a year or two; it will be carried through all the grades. The reading should be derived from a study of all sub-

jects. The meaningless jumble of words used in teaching language is to be set aside, and there is to come a real living use of the language that will make the child love the literature of a foreign nation.

Latin is the inner explanation of great people who lived long ago, and we can largely understand them through their language, unless the obstructions of grammar and definitions stand in the way. Grammar and definitions are necessary, but they come into the warp and woof of the work, instead of standing out by themselves. At the right time children can read Cæsár with avidity and intense pleasure. If they have back of them the geography and images of Helvetia and Gaul, with a good knowledge of Roman history, then with the advent of Cæsar they will love to study his words.

The same is true of Homer. The child studies Greek myth and Greek geography and history. At the proper time he ought to hail with delight the immortal epic.

Books and Appliances for Study A carefully selected library of sixteen thousand volumes testifies to the esteem in which books are held in the Chicago Institute. Text-books that open up subjects of study and guide investigation, that contain descriptions of nature and man, and that hold the treasures of literature and art, will be freely used. Those whose pages must be memorized for recitation will have but little place. Laboratories in biology, physics, chemistry, geography, and domestic science are being equipped with the most modern appliances to facilitate the individual investigations of pupils and teachers. The parks, the city, and the surrounding country will furnish a boundless supply of material for study, and an endless variety of questions to be answered.

Co-education The boys and the girls will be educated together. The advocates of the system which separates the sexes during this period of life have nothing to show in results, either in school life or in the society of later life, that warrants the position they assume. On the contrary, the Chicago Institute maintains that the natural and constant association of boys and girls in interesting, healthful work and play is necessary to lay deep the foundations of mutual respect.

Tests and Results On the part of the teacher every recitation will be an examination, and all the work of the pupils and students, estimated in terms of character, will measure their progress and determine their standing.

On the part of the parents these questions should be considered: Do the children grow better in home life and home work? Are they more helpful, more forbearing, more sympathetic, more reasonable, more intelligent? Have they better taste and a greater feeling of responsibility? If these questions can be answered in the affirmative, then the work of the school may be adjudged successful; otherwise it is a failure.

The school always will be open to parents, and the teachers will stand ready to consult with them regarding the pupils, with a view to a better mutual understanding. It is important for the teacher to get the standpoint of the parents in regard to the children.

Special attention will be given to dull and backward children. It is a well-known fact that dullness and backwardness are usually associated with some physical weakness. Physical training, manual training, music, and art are the natural means by which mental defects may often be effaced.

The new education differs from the old in aim, methods, and means. There must be indeed the new teacher for the new

education. The trade of teaching rarely fits one for the art. The profession of teaching is the art of all arts, and the teacher must be preëminently an artist.

This presentation of the aim and plan of the new school is not the mere statement of a theory, but represents possibilities that have been demonstrated by its teachers in the past.* It is sometimes supposed, however, that as the attempt is made in school work to be more philosophical, the results become less practical in their relations to the affairs of everyday life. This is a mistaken idea. The distinct purpose of the Chicago Institute is to train and equip its pupils so that all the usual demands made upon them as individuals and as members of the social body may be met in the most effective and, hence, the most practical way. It offers no inducement to any who would seek to realize the high ideals of life by any means except through hard and persistent effort.

The Course of Study

It is the purpose of "The Course of Study" to present in theory and practice a full exposition of the work of the Chicago Institute in the Academic and Pedagogic schools. This exposition will be continuous, and will consist of a monthly record of the work done in all grades and departments, prepared by the teachers of the grades and departments.

"The Course of Study" will be at once the curriculum, guide, and text-book of the students in the Pedagogical School, and a means of preparation for all persons who propose to attend the Chicago Institute. It is also intended to meet the needs of those parents who care to know, month by month, the theory and details of the work of their children in the Academic School. Persons who wish to study the new education will find many practical suggestions as to the application of its fundamental principles to daily schoolroom work.

This number contains the syllabi of the summer school. These syllabi, however, furnish a preliminary study of the work to be done in all departments of the Chicago Institute.

Syllabus of a Course of Lectures upon the Philosophy of Education

Francis W. Parker

"The school is society shaping itself."

"Education is not a preparation for life; it is life." Dr. John Dewey.

"Put into the school that which you would have the state." German motto.

I.

The purpose of this discussion is to examine existing educational aims and methods, and to establish the following propositions:

1. Education should be the evolution of self-government.

2. Social duties and responsibilities alone develop the habits and character essential to citizenship.

3. The school should be an ideal community and every pupil should, to the best of his ability, exercise the functions of citizenship.

4. The evolution of citizenship and the growth of the ideal community demand complete physical, mental and moral activities on the part of each pupil. Community life de-

*In the Cook County Normal School and the Chicago Normal School.

mands examination into its present conditions, its history and possibilities; it demands that knowledge which is needed to realize those possibilities—that skill which puts knowledge into life—that morality which actively holds the good of others as the supreme motive. Under no other ideal is it possible for a human being to appreciate the necessity of complete living and of earnest study.

5. The ideal of community life is the only ideal adapted to the nature of the child in the kindergarten, and to children and students of all grades, in fact to all human life. It is the ideal that appeals most strongly to young children, and which is in itself capable of expansion as the child develops and civilization advances.

6. The ideal of community life is the one ideal that is intrinsically moral and practically religious.

II. Appeal to Common Sense

An attempt to formulate practically the true and universal opinion in regard to the ideal of human character.

What do we want in our children?

1. Health: Physical, mental, and moral soundness. (a) Body: A vigorous, healthy body; a body fully responsive to the soul; a complete instrument of the will. (b) A body that can ward off or conquer disease.

2. Cheerfulness: Courage to live without complaining, to endure, to overcome, to cultivate a habit of cheerfulness under all circumstances. Habitual cheerfulness implies health, and contributes to the health of body, mind, and soul.

3. Helpfulness: Contributing to the welfare of all. (a) Fundamental: Habitual helpfulness is the intrinsic quality of complete living. (b) Prerequisites: True helpfulness requires knowledge, tact, and skill. (c) Aim: True helpfulness penetrates the real needs of the family, the community, the state.

4. Trustworthiness: The characteristic that makes community life possible. (a) Qualities: Trustworthiness embraces faithfulness, reliability, skill, and work. (b) Cultivation: Trustworthiness is cultivated by responsibility for home, for society, for the state and nation. The highest feeling of which the human being is capable is responsibility for the welfare of all mankind.

5. Good Taste: Love for the true and good and beautiful. (a) Discrimination: Good taste gives the power of discrimination between ugliness and beauty, coarseness and refinement, ignorance and culture, baseness and nobility, vice and virtue, evil and good. (b) Home value: Good taste makes home healthful and comfortable; a place where real art dwells in pictures and literature. (c) Social value: Good taste demands the best sanitary conditions in the community; beautiful architecture, parks, clean streets and clean back yards. (d) Working value: Good taste is essential in all work. "Art," says Dr. Dewey, "consists in doing anything well."

6. Vocation: That work by which the human being puts into human life the best that is in him. (a) Value: The value of a vocation depends upon the quality of the work done, and is measured by its usefulness to man. The inspiration to high quality is helpfulness. (b) Skill: The desire to be of use to others determines the quality of all skill. (c) Happiness: Usefulness and helpfulness form the basis of true happiness.

7. Citizenship: Character in terms of action. (a) Ideal: The true citizen has one dominant ideal, the highest good of his home, his community, his state, his nation, and through them, of all mankind. (b) Action: The true citizen is one whose best thought and action culminates in the spiritual life of man. (c) Qualifications: Health, cheerfulness, trustworthiness, good taste, a useful vocation, are the essential qualifications for citizenship.

Conclusion: There is a substantial agreement on the part of intelligent persons upon the essentials of character as here given. All parents desire these qualities in their children, and recognize that they are the elements of good character.

Every institution is judged by its achievements. What institutions have for their fundamental purpose the development of character as here portrayed?

Finally: What we need, that we should have.

III. An Examination of Conditions

A criticism of educational ideals.

Why are children sent to school?

Answer: "To get knowledge."

This leads to the consideration of three main propositions.

I. Knowledge-getting is the main purpose of conventional education. This is evidenced by the following prevailing conditions:

a. Requirements for promotion from grade to grade are such and such amounts of knowledge. b. The requirements for entrance to high school, college, or university are specified amounts of knowledge. c. Character is not made a test for promotion. d. Life asks: "What can you do?" The college: "What do you know?" e. Courses of study demand definite amounts of knowledge and skill in a certain time. f. Examinations are regarded as measures of knowledge. g. Parents are fascinated with the quantities of knowledge acquired by their offspring. h. Pedantry has fast hold upon the educational world. i. Knowledge as the end and aim is the controlling ideal in our schools.

II. Knowledge as an end is unscientific and utterly wrong. This is evidenced by the following facts:

1. The field of knowledge is boundless. Knowledge in and of itself, that is, knowledge in the aggregate, affords no criterion whereby a wise selection may be made of what is best for any stage of education.

2. Science is unlimited in its educative possibilities. But scientific knowledge in itself furnishes no guide for a right choice for education.

3. Knowledge of the classics has long been considered necessary for education. (a) It is said that the dead languages have intrinsic value for discipline. It is claimed that although all traces of knowledge of the classics may fade from the mind, still there remains a discipline. Is this an economy of personal energy?

4. The vast majority of pupils do not love knowledge, are not indeed interested, and almost all that is learned in school is forgotten, "mental discipline," it is claimed, remaining. A consideration of the means employed to stimulate study throws much light upon sad results. (a) Formerly, fear drove children to learn their lessons. Now a false aim is set up, rewards, prizes, per cents, diplomas, and degrees. (b) Children are led to gain knowledge by the systematic cultivation of selfishness, the root-vice of mankind. (c) That such means are necessary to stimulate interest discredits the knowledge-aim in education.

5. Text-books are in general specimens of condensed knowledge—so condensed that interest in the text-book is almost unknown.

6. Most so-called methods are short cuts to the acquisition of knowledge, the shortest cut being thought the best. Most new methods are repetitions of methods which appear and reappear like the fashions.

7. Most teachers do not study education as a science and teaching as an art. They have a certain amount of knowledge to impart, accompanied by training in reading and number and the modes of expression. The result is routine and monotony.

8. The science of education and the art of teaching are often considered of minor importance by school superintendents, heads of colleges and universities, and by the public. When a business-like way of acquiring knowledge is found, the problem is for them solved and remains solved.

9. Most discussions and books upon education are apparently aimless; there is a confusion of tongues.

10. The cause of this condition is the ideal of knowledge-getting as the purpose of education. Knowledge-getting limits both method and outlook.

III. The knowledge ideal is the handmaid of despotic government and is an anachronism in an age of self-government. History reveals its origin and causal relations:

1. The first means of keeping the masses in subjection employed through long ages was ignorance. The second, more modern means, is an education which limits the learner to subservience to government, whether aristocracy, hierarchy, monarchy, or partisan supremacy; in other words, the knowledge ideal is the potent means of training subjects. It had its origin in mediæval times, and still holds sway. Proofs of this fact are found throughout all modern history. (a) The history of Prussian education is the record of a prolonged war between the liberty-loving schoolmaster and a tyrannical government. The children of Prussia were kept from nature study for twenty years because contact with nature would lead them to think for themselves. (b) Manual training, or Sloyd, was forbidden in Russia for the same reason. (c) Kaiser Wilhelm said,

"The school ought, first of all, to have opened the duel with democracy." He also said to the heads of the Prussian real schools, "I want you to teach your boys what this government really is."

2. We are trying to educate children into citizenship by means long tried and proved as the best to train subjects.

IV. Subject or Citizen

Mankind has always been divided into two classes—subjects and citizens.

I. Subject: Characterized by subserviency.

1. Without Self-Choice. The subject is typified by the good soldier, one who obeys without question, follows because commanded. His duties and responsibilities are put upon him with little or no self-choice.

2. Without Reason. The subject is a machine to do the will of others. The higher faculties of the intellect are left in abeyance, are not cultivated; he believes without exercising his own reason.

3. Causes of Subserviency. (a) Physical fear, fear of corporal punishment, prison, torture, poverty, discomfort. (b) Spiritual fear of punishment hereafter. (c) Hope of material rewards, home comforts, fame, honor, money. (d) Heredity, ancestral environment, that has, seemingly, crushed out the divine spark of selfhood and fostered a selfishness that has become ingrained by countless generations of practice. (e) Ages of tyranny in which a few have controlled the many for their own selfish ends. (f) Wrong public opinion, a profound and almost universal belief that the vast majority of human beings are not capable of self-choice; that democracy leads to ruin; that despotism alone solves the problems of mankind. The crime of the ages has been a disbelief in the individual. This crime reaches its climax in the disbelief in the divinity of the child.

4. Subserviency Evidenced by History. (a) Every new idea born into the world that has penetrated man's soul with inspiration and faith has come by the way of the cross, the stake, the prison; through torture, scorn, contempt, contumely, and general rejection. This is the summation of proof that man is subservient; that tradition holds human beings in a vise. The struggle for freedom encounters ages of ignorance and bigotry. (b) It is far easier "to conform to this world than to be transformed" by self-activity "into the newness of light." Hence slow progress. "The blood of the martyrs is the seed of the church." (c) The most marked indication of human progress is the lessened time and struggle it takes to put new-found truth into life.

5. Subjects Classified. (a) Vassal, serf, minion, slave, are terms well understood. (b) A partisan without reason or knowledge of principles; a follower who believes and obeys without questioning. (c) A man who seeks for fame, money, power, as ends in themselves. (d) A teacher who obeys commands without understanding them. (e) A devotee of fashion.

II. Citizen: Characterized by rational self-choice.

1. Highest Type. The citizen is the noblest type of human being, one whose highest ideal is the good of others in the home, the community, the nation, the world. Hence: (a) He has the courage to accept and stand by what he thinks to be right, and to reject that which is wrong, seeking to find the best for his fellow-men. (b) In the questions of franchise he seeks to choose competent officers, and to make wholesome, necessary laws. (c) He is an earnest, indefatigable student of history and science in order to find that which is best for mankind.

2. Faith. The citizen has an unfailing belief in the infinite possibilities of human growth. Hence: (a) He is controlled by his responsibility for his brother man, and devotes his intellectual powers to the problems of man's salvation. (b) He puts his home, his vocation, and all the best there is in him into the improvement of the race.

3. Franchise. The franchise does not of itself make one a citizen. (a) A voter may be the most abject slave of public opinion, of corrupt rewards, of desire for fame, of a political boss. (b) A non-voter may be an ideal citizen, using her influence and energy for the elevation of man.

4. Citizen and Subject Compared. (a) A subject generally has fixed ideas. A citizen has ideals that cannot be realized in a lifetime.

V. Liberty and Freedom

Liberty and freedom are prime essentials of good citizenship.

I. Liberty: The external Conditions for self-choice.

1. Development Unhampered. (a) Perfect liberty means that no obstruction of law, custom, or class distinction stands in the way of the individual's realizing his ideals of right, justice, and progress. (b) The franchise is a condition of liberty.

2. License. There is a vast difference between liberty and license. License is the abuse of Liberty; it is generally the personal choice, from motives of selfishness, of that which injures others and degrades one's self.

3. Law. (a) Good human laws are the means of preventing license. (b) Law may hinder the growth of that which should be left to self-choice.

4. History of Liberty. The history of liberty is the story of man. (a) Love of liberty is one of the deepest, most persistent of human instincts. Ages of tyranny cannot crush it; it has made its way against unrelenting opposition through war, prison, banishment, and death. (b) Political liberty has been and is feared and dreaded by king and tyrant. When the people think, thrones tremble, and therefore the exercise of this divine right has been made a crime. (c) Every great man or woman of the past whom the world loves to remember and reverence was a champion of liberty. (d) Every great reform in human history related to the discovery of truth, whether religious, political, or social, has meant the enlargement of personal liberty.

5. Liberty and Government. (a) Governments have been organized, laws made, armies trained and supported, and even schools conducted chiefly for the perpetuation of fixed forms of government and the suppression of the best in man. (b) A great majority of mankind are rooted and grounded in the belief that the masses should not be trusted with liberty nor permitted to think for themselves.

II. Freedom: Perfect Obedience.

Liberty and freedom are popularly used as synonyms. Philosophically, liberty is a condition, a grant to individuals, made by society, community, or nation. Freedom is entirely a personal matter; it is that which every human being may acquire for himself, through his own personal activity and in no other way.

1. How Gained. (a) Freedom is gained by obedience to God's laws. Perfect freedom is perfect obedience. The highest of God's laws is the golden rule. (b) Freedom may be acquired by strong, courageous individuals without the aid of external liberty. Punishment is generally the result of such freedom. (c) The power to acquire freedom depends primarily upon the tribe or the nation, and secondarily upon the individual.

2. An Individual Matter. (a) There are grades and limitations of freedom. Every normal human being possesses a certain amount of freedom. (b) A body in any way responsive to the will exemplifies freedom. Skill in trade, business, artifice, and art—power of expression in any mode—facility in doing anything—may be placed to the score of freedom. Every effort in the right direction in obedience to law, brings freedom. (c) On the other hand, the most prolonged, strenuous, vigorous striving that does not conform to law lames and cripples the being. Working in the law means the support of all natural and divine powers.

3. Freedom and Work. The aim of work determines its quality, and quality has much to do with freedom. (a) The highest, noblest aim stimulates the strongest, most persistent efforts of body, mind, and soul, and therefore brings the greatest freedom. Any aim below the highest limits freedom. The grandest ideal lights its own way to achievement. (b) The power to strive for freedom is the divinest gift of God, the highest glory of man. Man works out his own salvation. He knows the doctrine because he does the will; he creates because he was created to create. He does righteousness and is righteous. Every bit of freedom must be acquired by personal activity, controlled by the highest ideals and governed by God's laws.

III. Liberty and Freedom Compared.

Liberty is an external political condition. Freedom is an internal personal state.

1. Effort Essential. The most favorable external conditions may induce no personal striving for freedom or only faint attempts in that direction. (a) The slaves of the South thought that liberty meant immunity from work with ease and pleasure. (b) The French people, moulded by ages of oppression, were wild over liberty, but failed to under-

stand that personal freedom must be gained by working and living for the nation. (c) The Germans in the time of the French Revolution were kept from following the French example through love of the fatherland.

2. Restrictions Necessary. Liberty must sometimes be restricted that personal freedom may develop. (a) A grave problem to-day is whether certain peoples are prepared for liberty. Must they not be educated into liberty? Instance the South American Republics; the Philippines. (b) The liberty of children must be restricted until they gradually acquire the power of right self-choice, i. e., freedom. (c) True education is the acquisition of freedom, it is the development of the right attitude of the mind towards truth.

VI. The Nature and Function of Environment

In popular usage environment and surrounding are synonymous. As biological or educational terms they have different and distinct meanings.

1. Environment is the aggregate of causes, external and internal, which influence and change the individual, and from this aggregate very much of the surroundings is excluded. (a) Surroundings include sky, earth, vegetation, animals, and man; indeed, all the sources of knowledge, past, present, and future. Environment in the sense of surroundings would have no value as an educational term. The questions in education are, What is the nature of the being to be educated? What affects and influences the being? (b) Environment acts upon the mind through the medium of the senses. Waves of ether of a certain length and volume create a knowledge of colors. For a person congenitally blind there is no environment of color. The effect of external color upon one color-blind is distinctly limited. Waves of ether within the color boundaries are countless; comparatively few of them affect the highest human organization. The knowlege of color is modified and limited by the individual brain, nerve system, and nerve centers. (c) The same is true of hearing, touch, and the other senses.

2. Environment Relative. (a) The nature of individuals determines the influence of environment. Each human being has his own differentiated environment. (b) The evolution of sentient beings means primarily the growth of physical organization. At each progressive stage of brain evolution the capacity for being affected by external causes becomes greater. Surroundings change to environment. Instance the savage, who has a very limited environment amid surroundings of endless variety, beauty, and grandeur. (c) In the discussion of the value of nature study authorities point to the natural beauties surrounding savages, and ask why with such opportunities Nature does not educate them. The answer is obvious: The limitations of environment are determined by the physical organization.

3. Educational Value. The study of environment has an immense educational value. It furnishes the key to the whole subject of teaching and training. (a) Environment comprehends all the causes of development. (b) The child imitates the language which he hears. Enunciation, pronunciation, idioms, dialect, are all products of imitation. The child's command of language depends upon his power of understanding and using speech. Thus the language environment grows as the child's experience becomes enlarged. (c) The child imitates the acts of others, but his power of imitation is limited by his capabilities. (d) The environment of public opinion has a controlling influence upon the children. The comprehension of public opinion begins with mere feeling and develops with the mental powers.

4. Child Study. (a) Child study within the range of the average teacher's opportunity is limited to the investigation of the particular environment of each child. (b) Heredity is ancestral environment. (c) The study of that which influences the child comprehends the study of the child itself—in other words, the study of a child's environment means the diagnosis of that child. (d) Such knowledge makes the conclusions of physiological psychology of substantial assistance in teaching. (e) The teacher though unable to avail himself of a thorough laboratory course in psychology may yet use with advantage the results of such investigation by others. Instance: The doctrine of the organic circuit.—John Dewey. Man a moral being.—Munsterberg. Every nerve and nerve center has its functions and capabilities of correlation, its weakness or strength, and its destiny. (f) The results of environment in childhood, good or bad, lead to permanent habits. Instance the little boy taken from a crowded, filthy street, having his

first experience in the country, who begged to go home where he could enjoy the delightful excitement of the patrol wagon every twenty minutes.

5. The Whole Doctrine. To know the needs of pupils and to supply them comprises the whole doctrine of education.

VII. Self-Recognition

The child announces his appearance on earth by a demand to be recognized as a human being, endowed with powers of body, mind, and soul.

1. Self-Recognition Universal. Desire for recognition of self one of the instincts of humanity. Illustrations are countless: (a) In children we note baby's smile, delight in learning to speak, walk, dance. Pleasure in showing off new clothing, dresses, first trousers, boots, cloaks, parasols, etc. Prowess in plays and games. Imitating father and mother in their work. Driving horse, baking cakes, sweeping, etc. (b) Pride in doing anything that meets with approval, whether good or bad, even distasteful things; learning to chew tobacco, to drink liquor, are disgusting performances in themselves, but the desire to be considered "manly" overcomes disgust. The same is true of swearing. (c) Desire to be recognized as somebody common to adults as well as to children. It often becomes more intense as age advances. Orators, actors, and singers are anxious for applause. The author and the artist desire approbation. This anxiety often induces nervous, sensitive, and even morbid states.

2. Self-Recognition and Environment. The instinct of self-recognition is of potent force in the formation of individual character; its effects, whether good or bad, dependent upon environment; environments intended for good which have a negative or debasing influence. (a) A parent with an absorbing love for children may ruin them by an environment not adapted to their needs. (b) A teacher with strong sympathies, an earnest desire to do good, may make a wrong environment.

3. Self-Recognition and Public Opinion. Because of the intensity and universality of the instinct of self-recognition, public opinion is the most influential factor of environment.

4. Self-Recognition and the Teacher. The teacher is an organizer of an ideal community, a creator of public opinion, that shall control the school community. Public opinion must spring from the needs of the individual and of the school, must respond to the higher nature of the child, must be stronger than all other influences. (a) If fear be a controlling influence it leads to repulsion, a disgust for study and subjects of study. (b) Love for rewards, per cents, promotion, ungenerous rivalry, defeat all attempts to create a righteous public opinion. Selfishness, the outcome of bribery, disintegrates society. It prevents the subject-matter of study and modes of attention and expression from entering into and influencing character. Compare a 100 per cent in an examination on the life of Abraham Lincoln with the influence of his life upon the school community. (c) The influence of the teacher may be subverted by the influence of one bad boy. (d) Pupils may be made hypocrites in the presence of the teacher, conforming to rules for his approbation. The opinion of the teacher is often the antithesis of the public opinion of the school community. (e) Public opinion should demand only the very best from each pupil. Take as an illustration: A self-willed boy, accustomed to much attention at home, enters the kindergarten. The children are playing and working together in harmony. The teacher invites him to join, but he is not accustomed to joining others—heretofore, everyone has joined him. He demands attention and applause. The little community moves on with no further notice of the stranger. The boy kicks, roars, refuses to join. No one notices him. Here is something entirely new, and as his usual efforts for recognition become exhausted, he joins and tries a new and better way to gain appreciation. (f) Putting responsibility upon pupils a mark of recognition. The bad boy is bad often from the feeling of self-abasement, lack of recognition, with very little to do in school that he likes. Give him some responsibility, and the feeling that he is of value leads him to a respect for public opinion. (g) The duties and responsibilities of citizenship have the strongest influence. "I am responsible for the whole school," "I must do everything to help and nothing to hinder," should be the dominant feelings. (h) The child is full of activity. He must have much to do—he will do much anyway, right or wrong. He will do what public opinion demands. Create a public opinion which demands the best, and it will

touch the mainsprings of life; he will feel and understand values.

VIII. Doctrine of Interest

I. Ideal: The basis of action.

1. Act and Aim. Every voluntary act has a definite end or goal. This proposition is axiomatic and may be variously stated: End or goal means aim, purpose, achievement, etc. (a) The end may be readily and immediately attained, or it may require greater or less periods of time for its achievement. It may be a life work, or it may transcend even the limits of a lifetime. (b) Ends and aims differ in value. They may be noble or worse than worthless; may be honorable or dishonorable; may be for the welfare or the injury of mankind. (c) The end, or goal, is imaged, conceived in the mind, and held in consciousness as an ideal through successive steps of realization.

2. Function. (a) The ideal determines and limits all that enters into its realization. As the architect is guided in his plan and choice of materials by the ultimate use of an edifice, so the ideal held in consciousness determines the means whereby it is realized. (b) The higher the aim the higher the means required to attain it. (c) It is the law of nature that only that persists which best serves her purpose, and with the individual only that which serves his end becomes personal to him. Only those means are used which meet the demand of his ideal aim. The man whose aim is riches assimilates and utilizes only that which pertains to his particular way of gaining money. (d) Motive is the desire of realization inspired by the ideal which stimulates the impulse, or series of impulses, prerequisite to such realization. (e) Method is the personal way one strives to realize an ideal. Method includes all the peculiar personal ways of working to accomplish a purpose; ways of study, expression, reason. (f) Self-discipline is the training of the will effected by self-activity in the effort to realize an ideal.

3. Interest. Interest is the emotion, the glow of enthusiasm which accompanies effort to attain an ideal. (a) Interest is not synonymous with pleasure. The patriot soldier fighting for his country is not pleased, but is exceedingly interested. (b) Interest is a constant factor of consciousness. Everyone is interested in something all of the time.

II. Application to Education.

1. Self-Creative. Education is the self-creation of an ideal accompanied by the self-activity required to realize it. All education should be primarily directed to the creation of the right ideal in each individual soul and to the stimulation of right personal motives.

2. The Child's Ideal. Every child has an ideal of some kind. Ideals may be multifarious. They may undergo constant changes. A settled manner of living tends to the formation of a permanent ideal.

3. Purpose in Work. All work or study on the part of the pupil is under the stress of some purpose, stimulated by some ideal.

4. The One Essential. Knowledge is to the student the fundamental and absolutely indispensable means of realizing his ideal.

5. Exclusion of Extraneous Matter. The rule holds in education as in nature, only that which serves the end persists. Only such knowledge is assimilated as can be utilized in realizing the individual idea. (a) Self-expression, skill, aptitude on the part of the pupil limited to the demands of the ideal. The student acquires only that skill which may be utilized to achieve the end in view. (b) The exercise of reason is in general limited to the choice of knowledge and materials and their adaptation to the realization of an ideal.

6. Concentration. Concentration is the bringing to bear of the whole being upon the realization of an ideal; the will, the reason, and all the powers of the mind; knowledge and material, method, study, and self-expression.

7. Correlation. (a) Correlation is the direct outcome of concentration. It is the selection of that knowledge best adapted to the realization of an ideal without regard to the classification of knowledge. (b) Correlation is the absolute rule in all the businesses and arts of life, and education should not be an exception. It is the simple, common-sense method of choosing and using that which is best adapted to the work to be done.

8. Methods of Teaching. (a) All effective methods are self-creations. (b) No one can use the method of another successfully without an adequate conception of the ideal which was the inspiration of the particular method. Mere imitation of a method of teaching discredits the ideal.

9. What Ideal or Ideals Should Children Have? (a) The ideal to which the whole

being responds. The ideal that is adapted to every individual child and to every stage of human development. (b) The ideal that demands the largest scope and amount of knowledge; the greatest exercise of the will power, of discipline, of reason, of concentration and correlation. (c) The ideal of which mankind is in greatest need. What is the ideal?

IX. The Recitation

Its Function, Method, and Motive.

I. **Function:** (Use in the Educational Scheme.)

1. Aim of teacher and pupil identical. (a) The function of the recitation for both teacher and pupil is to assist to the extent of their abilities every member of the class in educative thought and expression; to efficiently aid every one in the class in the acquisition of knowledge, thought, and power; in the cultivation of the reasoning faculties, and, above all, in enhancing the desire to help others. (b) In other words, the function of the recitation is to utilize the time and the powers of the teacher and each and every pupil, to the best advantage of all; to fully exercise the whole being, mind, body, and soul in the most profitable manner, in the time allotted.

II. Method—Ordered Procedure.

The fundamental law of all education should be rigidly observed—that of self-activity. The right method stimulates original personal activity.

1. Attention Essential. Attention to the subject in hand, and to the action of the minds of the teacher and of every pupil, is an absolute requisite. (a) Listen assiduously to every word said, and observe closely everything done. (b) Strive to understand all statements and propositions made. (c) Weigh and judge fairly and honestly the thoughts of each speaker.

2. Genuineness to be Cultivated. (a) Teacher and pupil must lay bare their own minds through a genuine expression of that which they believe to be true, or through an honest and courageous expression of doubts. (b) Never hesitate to reveal your own ignorance of a subject or of a detail. Express clearly your own personal difficulties in striving to discover the truth. (c) Constantly cultivate the art of questioning; ask those questions only which will help a classmate to form better images, and make proper inferences. (d) Each pupil should make his own inferences. Facts, knowledge, to help original judgments, should be freely given. A fact that is not directly used in reasoning, drawing inferences, is useless. (e) Be ready at any moment to give facts and state your own original inferences, and to appreciate the statements of others. Distribute to the class the products of your study and investigation, keeping ever in mind the needs of your classmates as well as your own.

3. Hypocrisy to be Avoided. Hypocrisy, the antithesis of genuineness, is sometimes systematically cultivated in recitations. A strong habit of concealing one's true self is thus formed—a habit to overcome which takes prolonged, vigorous, and persistent efforts of the will. The pupil should be led to avoid the following too common faults: (a) Conforming implicitly to the knowledge, opinions, and belief of the teacher, thus cultivating a shrewdness, a servility in imitation that leaves all originality in abeyance. (b) Holding a high per cent as the chief end of all school efforts. (c) Struggling to get the best of classmates simply in order to stand at the head. (d) Putting the whole mind upon the mere memorizing of words. (e) Talking for the sake of talking, or for the purpose of showing off.

4. Preparation. (a) All study, investigation, and experiment should be for the direct purpose of assisting the whole class in its work, especially in recitation. (b) Laboratory, field, and library work are, in general, personal studies in striving to solve problems by the use of material and apparatus with the least possible assistance. The teacher presents the problems and gives only that aid which stimulates, and economizes self-activity or personal effort. (c) The recitation, however, is essentially laboratory work extended; in recitation the problems are not solved by use of materials, or by the study of books. All the problems of recitation are of *mind*, solved by the close study of the different thought manifestations; by understanding the phase of thought, the varying experiences, the personal efforts, the mistakes and successes of individuals. Every lesson will leave problems unsolved, which impel one to new or renewed experiments, to investigations by observations and to the study of text in order to bring fresh

resources to the class in the succeeding recitation.

III. Motive Stimulating Desire.

The motive in recitation, as in all action, is the desire to realize an ideal. The motive of seeking to assist others in the recitations is the highest possible motive one can have. It leads one to seek for knowledge for the purpose of using it, to find the best method for the purpose of helping others. In a word, to strive to be a citizen of an ideal community. The steady and persistent cultivation of this motive in the recitation contributes to the high culture of the individual.

1. Memory Strengthened. One's whole store of knowledge in relation to the subject in hand is needed constantly in every discussion. Use of knowledge is the fundamental means of strengthening memory.

2. Knowledge Acquired. Each pupil in recitation presents a different side of the same question. In trying to help others he feels the necessity for more knowledge. He also knows instinctively the purpose of the knowledge he wishes to gain. Therefore he seeks for it eagerly. Thus preparation for recitation becomes a necessity.

3. Expression Cultivated. Expression in all its modes is brought into complete exercise. The pupil wishes to make the teacher and the whole class understand thoroughly his thought, for which purpose he uses speech, writing, drawing, etc.

4. Physical Energy Developed. The whole body is the instrument of the mind in attention and expression. Prolonged efforts in attention require the health and vigor of the whole body. No merely physical activity is so absorbing of physical energy as prolonged and close attention. The natural attitude of attention must be steadily maintained. The same can be said of expression. Expression requires the constant exercise of physical activity. The direction of this activity is entirely governed by the motive.

5. Self-Consciousness Overcome. The only possible way to overcome self-consciousness is by the continual exercise of the will in helping others. The mind is absorbed by the question in hand, and the whole being is under control of the will, moving steadily towards its goal. Thus one becomes unconscious of the agents of expression.

X. The Ideal and Motive in Education

Education to-day should be adapted to the conditions of freedom in a free land. It must, therefore, be dominated by an ideal commensurate with the duties, responsibilities, and spiritual promise of the free man.

I. Citizenship: The Flowering of Human Character.

1. Ideal. The highest type of free man is the citizen, and the ideal of citizenship—of community life—inspires the motives in education that lead to the highest and best results. (a) Knowledge ceases to be an end and becomes simply the necessary means for realizing the ideal. (b) It necessitates a break with tradition and the discarding of methods adapted to holding people in subjection. (c) It demands, as an essential of right environment, a healthy public opinion which shall appeal to the instinct of self-recognition and make the school a true community, working out the problems of self-government. (d) It vivifies interest and stimulates self-activity in obedience to the law, whereby the individual attains freedom. (e) It demands the giving of one's powers, body, mind, and soul, for the good of others.

2. Motive Altruistic. The motive inspired by the ideal of citizenship is the desire on the part of teacher and pupil to realize immediately that ideal, and the motive is fundamentally and insistently altruistic. The value of the altruistic motive is evident. (a) Acts of selfishness may be admired, but the actors are never loved. Acts of altruism are always met by the love of all mankind, when sufficient time has elapsed for them to be understood and appreciated. By this standard think of the common opinion of Alexander, Cæsar, Napoleon, Washington, Lincoln, Florence Nightingale, Comenius, Pestalozzi, and Froebel. The deepest and profoundest intuitions of man turn unerringly to the altruistic motive. (b) The final judgment of all human organizations, church, state, and society, is derived from what an institution has put into this world

as an active and eternal good. Such final judgments do not depend upon creed, or forms of government, or constitutions, but upon spiritual results. (c) In all our personal friendships, our final judgment of friends depends upon our belief in their motives in life. Just so far as the motive is for the good of man does the memory of a friend remain with us as a sweet incense. (d) There never was in the history of the world a bit of immortal art, literature, music, poetry, painting, or sculpture, created under the desire for fame or wealth. It is granted that many love truth, in both art and science, for truth's sake, and thus produce very important results, but the highest results come from the inspiration that the work done will be of use to man. (e) That this work, whatever it may be, is going into the eternity of human life, is the highest incentive to human action. Through living from the altruistic motive, man feels his greatest dignity.

II. Practical Application to Teaching.

1. The Teacher. The educational ideal of citizenship and the resultant altruistic motive make large demands upon the teacher. He becomes a vital social force. He ceases to be a task-master and becomes a prophet revealing the way of life. (a) The teacher is responsible for the spiritual welfare of each pupil under his charge, and for every child in the never-ending series. The teacher is responsible in a marked degree for society. The school of to-day is the society of to-morrow. (b) An appreciation of this responsibility is the strongest possible incentive to incessant study, acquisition of skill, knowledge of the child and his needs. (c) A profound and growing love for humanity; a faith in infinite possibilities of improvement; a belief in an inexhaustible supply for man's needs, and a recognition of eternal loving laws, lift the teacher's art to the highest place in human economy.

2. Preparation. An appreciation of the tremendous responsibility of a teacher leads to a prolonged and intelligent struggle in preparation. (a) The common aim: The shortest cut into the school-room through a diploma or examination. (b) The common purpose: Earning money. (c) The common result: Poor teaching by an artisan teacher.

3. Teaching a Profession. The profession of teaching requires more preparation, moral, intellectual, and professional, than any other. (a) Education is the science of all sciences; teaching is the art of all arts. (b) Appreciation of the greatness of the art leads a candidate to make every effort, financial and otherwise, to acquire the art. (c) One who has any appreciation of the art, or of the responsibility of teaching, shrinks from entering a school as a teacher.

4. The Teacher a Reformer. The teacher must have the singleness of purpose and the courage of a reformer. (a) The necessity for courage is greatly increased by the exceedingly low state of public opinion in regard to education. It is also increased by the extreme difficulty in overcoming prevailing defective methods; in convincing superintendents and principals that better methods and means should be used. (b) The only way to introduce better means and methods is to demonstrate practically their use and superiority. (c) Such reforms require great and persistent courage, tact, patience, and self-control all of which are not possible without a dominating love for humanity.

5. Love the Key. Love for children leads teachers to a close study of individuals, to an appreciation of the good in them, and to an understanding of their evil tendencies. (a) There is a false love for children, a superficial sympathy, a pleasure in tricks and manners, a desire to be loved by them which leads to petting and the over-development of precocious instincts. (b) A true love for children is the one incentive which impels the teacher to study their natures, to try to understand them, to differentiate one character from another, to comprehend personal needs. (c) Love begets patience. Changes in character come about with great slowness. Changes in character mean changes in brain structure, changes in muscles, nerves, indeed in the whole being. A chronic difficulty, physical, moral, or mental, yields only to constant and well-directed application of the right means to the end. Love alone can find the way. (d) Love develops the highest courage, courage to stand between the child and all evil influences, such as badly arranged courses of study, public opinion, unjust demands of parents, ignorant supervision, or the immoral fear of punishment. No one can understand the child's educational needs so well as the teacher.

(To be continued in our October number.)

XI. Relation of Knowledge to the Evolution of Character

1. The educational functions of the mode of attention, observation, hearing-language, and reading. As mere processes the modes of attention have no intrinsic value. Reading, for instance, may be intellectual dissipation, may be immoral; or on the other hand, it may lead to moral and mental growth.

2. The value of mathematics in education depends fundamentally on the knowlege acquired by measuring. As a mere mental process mathematics is at its lowest value.

3. The modes of expression may be moral in their influence upon others, mental in the reaction of expression upon thought, and serve as the reinforcement of the modes of attention. (a) Neither modes of expression nor modes of attention have in themselves any intrinsic moral or mental value. Their value consists entirely in knowledge getting and giving, and in the consequent development.

4. The value of knowledge consists in its use for the good of man. Self-expression is the use of knowledge. There can be no act of the will without a knowledge basis. Nothing can be done without a basis of knowledge. Development of civilization means the expansion and concentration of knowledge in life. What blood and breath are to the body, that, in a larger sense, knowledge is to the mind.

5. Knowledge should always be mind nutrition. (a) Self-expression makes knowledge nutritious. Through self-expression knowledge is assimilated and correlated and becomes memory, power, mental and moral life. (b) Correlation is focused in expression. (c) Teaching adapts to the pupils' mind that knowledge which they need to use immediately. Present good is everlasting good. (d) The selection of knowledge to be taught depends entirely upon the needs of pupils, and pupils need only what they use. The use depends upon the demands of their community life. (e) The feeling and understanding of the immediate uses of knowledge on the part of the pupil are the strongest stimuli and incentives for study.

6. The one central subject of study is creation, its history and its future—creation of nature and of man. (a) Creation is ever going on all around us and in us. Everything is changing. Change is controlled by immutable laws. There is no effect without a cause. The study of causes is the study of law, and the study of law is the study of creation. Thus all genuine study is practically religious. (b) Knowledge (truth already found) is boundless. Truth yet to be discovered is infinite. There is, therefore, only one guide in the preparation of a course of study; knowledge adapted to the understanding of the learner, knowledge that is nutritious, that is needed for immediate use.

7. The effect of nature study upon character. (a) From nature man takes his food, clothing, and shelter. (b) Through investigation, experiment, and consequent discovery, geology, physiography, mineralogy, astronomy, meteorology, botany, zoölogy, and the long list of sciences have been found by man for man's use and education. In a half century most, if not all, sciences have undergone radical change. Changes have been made that amount to revolutions. Subjects that a short time ago were obscure and vague, are now rich with facts and replete with interest. (c) Knowledge of nature supplies man's material needs and enables him to help his brother man. (d) The study of nature gives rise to emotions of wonder, beauty, grandeur, and sublimity. It is the study of the creator through his creation, and therefore induces reverence, love, and worship.

8. Man's influence upon character is more direct, immediate, and marked.– (a) The strongest tendency of man is to imitate those around him. The child imitates his mother and other members of the family. Later, public opinion exercises the most powerful influence. (b) The child acquires speech, customs, habits, religious beliefs, party tendencies from his immediate environment (c) The function of history is to enlarge and strengthen public opinion. History should be taught to arouse noble feelings in the soul; to present the grandest examples of manhood. Nature suggests thought, arouses a desire to investigate, to discover laws. The study of nature leads to originality, independence of thought, and doubt concerning fixed ideas. (d) In broad terms, man is the demand, and the universe of God the supply.

9. Man and nature a unity. (a) Neither can be properly studied alone. (b) Each has functions in education, and both are needed for all-sided education.

10. Richness and fullness of knowledge. (a) There is an abundance, rich, full,

and overflowing. How is it that long years of school life result in such a dearth of knowledge?

XII. Relation of Self-Expression to Knowledge and Character

1. Physical Basis of Expression.

Motor Discharge, Organic Circuit.—Dewey.
Dynamo Genesis.—Baldwin.
Man a Reactive Animal.—James.
Physical Basis of Morality.—Munsterberg.

1. Functions of Expression. (a) Physical development. Growth and power of the brain and nerve system. (b) Demand for attention. (c) Concentration of images. Mental development. (d) Moral power.

2. Knowledge becomes mind nutrition by means of expression.

3. The proper exercise of all the modes of expression is the best physical exercise. Physical training has its best outcome in the development of expression.

4. Each mode of expression exercises certain bodily agents. The exercise of all of them develops the whole body.

5. The bodily agents of expression are the product of similar and appropriate exercises throughout countless generations (heredity).

6. Any physical exercise in expression that cripples the body is absolutely wrong.

7. All exercise of expression should be easy and graceful.

2. Mental Functions of Expression.

1. Expression demands the holding of images in consciousness.

2. Holding an image in consciousness is indispensable to the growth of that image. Holding transforms knowledge into nutrition.

3. By expression the memory is cultivated in the best possible way. We remember what we do.

4. Expression is the strongest stimulus to attention or study. (a) With brush, pencil or clay in hand, the observation of the object to be represented is keenest and most prolonged. (b) Reading with the motive of expression. (c) Art expression without a model demands the most careful imaging.

3. Each Mode of Expression has its Special Mental Function.

1. Gesture cultivates grace and power in manifesting thought.

2. Speech in education excites the mind to close and careful thinking.

3. Music cultivates the emotions, exalts the mind, and leads to harmony in community life.

4. Making requires very close and careful imaging.

5. Modeling develops images of form.

6. Painting is the very best means of studying color.

7. Drawing requires the most careful analysis of form and color.

8. Writing demands the concentration and expression of thought.

All the modes of expression are naturally correlated, as form and color, making and modeling, speech and writing.

4. Moral Use of Expression.

1. Expression is the self trying to realize some ideal.* The ideal to be realized determines the quality of the expression and the thought.

2. The ideal of community life is the strongest stimulus to the best quality of thought and expression.

3. Community life demands all-sided expression, *i. e.*, expression in all its modes.

Conclusion. Expression is the most practical and most important means of training the body, mind, and soul.

*See Doctrine of Interest.

(To be continued in October number.)

Suggestions for a Course of Lessons in Psychology

1. Study in General. An Examination of Environment. The general modes of learning subjects are well established.

1. Nature. Natural science furnishes a clear illustration of the proper method of all study. The human being is surrounded by earth, air, and water; clouds and sunshine; plant life is everywhere touching the sense-organs; in fact, everything he afterwards may study in science impinges upon him on all sides. We get little more, without study, than the knowledge of the names and some superficial relations of the great mass of objects with which we come in contact every day. Although we know a great number of objects, to use Dr. James' phrase, "We know little about them." Gaining a genuine and valuable knowledge of any

science requires long, persistent observation investigation and experiment. The student must not only come in contact with the objects, but must ask questions of them, about them, in such a way as to obtain a series of facts, out of which arise inferences. The series of inferences thus obtained are the basis of future generalization.

(a) If we study botany, plants are the objects of observation. Every one knows something about vegetation in a general way; the student, however, must examine closely the whole plant, its foliage, limbs, stems, trunks, roots, must discover its form and function and its many relations to organic and inorganic matter. Nothing but persistent efforts will ever bring usable knowledge out of a plant, or any other study. The observation must be continued, persistent, and must ever lead to new and fresh inferences.

2. From Simple to Complex. There is a normal order of observation and experiment. The first observations are necessarily superficial; they touch slightly things that have been merely seen or handled. There must be a long series of experiments and investigations, moving from outside inward, moving from easy observations to apparent inferences, then to the more and more difficult, from the superficial and easy to that which lies deeper.

(a) To try, in the initial steps, to go immediately into the deep questions of botany, would be to learn simply unmeaning generalizations.

(b) The great failure in all study of science is the failure to make thorough the preliminary and elementary studies. It is a common and fatal error for both teachers and pupils to plunge into generalizations that cannot be understood—by the pupils, at least. This course defies the law of self-activity. Subjects must be adapted to mental powers, else there is no such thing as assimilation.

3. Books Secondary. Nothing can be learned *primarily* from books. Books guide and assist in observations; prepare the minds for inferences and generalizations; present generalizations that the students must verify by facts, else they are worthless. All elementary knowledge must be acquired through observation.

4. Interest. No one can really study any subject continuously without acquiring a genuine and deep interest in that subject. For instance, one who really studies botany is ever on the alert when plants are present in woods and fields and conservatories. Everywhere the student of vegetation is constantly learning something new. (a) The love for any subject, really studied, increases at a tremendous ratio. This love is intense interest; is, indeed, the one infallible sign of true study. On the other hand, if one dislikes a subject, it is a sure indication that he has never really studied it. (b) There is a vast difference between mere words and thought; between merely seeing an object and observing it.

II. Study of Psychology. The general method of the study of psychology is the same as the study of all subjects. The student has at command, if he will use them, a series of specimens, constantly present, constantly changing, everlastingly new. Psychology is fundamentally the study of the changes of one's own consciousness, with a due regard to the content or substance of thought.

1. Consciousness. Every human being has what may be called a stream of thought that begins in early babyhood and continues throughout life, broken it may be by sleep. This stream of thought goes under the general term of consciousness. The study of the changes of one's own stream of thought, and that which goes on in the stream of thought: in other words, the investigation of consciousness and that which it contains, is the basis of all psychological study.

2. Method Introspective. The study of psychology must begin then with a long series of careful investigations of one's own consciousness and its changes. The facts acquired in regard to one's own consciousness may be used to infer that which happens in the consciousness of others. (a) The one thing absolutely indispensable in the study of psychology is to separate (in thought) the stream of thought, the images in the stream of thought, from all objects external to consciousness. Up to a certain stage of personal growth, outer objects and inner conscious states seem to all intents and purposes identical. When the outer and inner are differentiated, the student enters into a new and higher stage of development. (b) Psychology is by no means an elementary study. It is doubtful whether many students in secondary schools are ready for the scientific inspection of their

own minds. It can be easily understood how we learn to know an object: by observing it, examining it, comparing it, and analyzing it; for instance, as we should observe, examine, and analyze a tree, a flower. It is easy to believe that this examination is done in one's own mind. We observe the movements around us; we examine them and analyze them; these processes have become a second nature to us; but to tell what is going on in the mind other than the general inference that these acts of observation and analysis take place in consciousness is far deeper and more difficult to comprehend. A student who has not gone through a long course of study, under the most scientific general method, covering geography, science and other kindred subjects, is not well prepared to take the much higher step and examine scientifically the changes in his own mind. There can be no study of psychology of any worth whatever, unless there is a persistent, careful introspection of continuous and continual consciousness. The mind is in action all the time, but to see, hear, touch, or taste, and at the same time ascertain how these processes effect consciousness requires the closest and most careful and discriminating study.

3. All Questions Psychological. To the student really studying psychology, every question that arises has a psychological side. We instinctively study the minds of others; we interpret their motives. When we carry this instinctive and spontaneous action further, and endeavor to closely discriminate the thoughts of others, what they are and how acquired, we have learned to study psychology.

(a) A teacher, when he is watching pupils and trying to interpret their mental action, is studying psychology, and every new pupil is a new specimen. One can always know when he is really studying, by one infallible test: he applies his knowledge at every step, applies it in the methods of his own study and in helping others.

(b) The study of psychology means in a high sense the knowledge of one's self. It must be begun with a faith that there are immutable laws of mind action, laws that may be found, understood and used.

III. Images. It is a very difficult problem, indeed, for the teacher to ascertain just how and in what manner to begin the study of psychology. Like the study of any subject it means the selection of subjects and the examination of them. The lessons here outlined consist of a careful examination of images taken from the stream of thought called consciousness—images that are the products of past mind-action. These investigations do not by any means go deeply into the subject of psychology. They leave in entire abeyance all difficult questions. They propose a series of questions similar to those in the study of natural sciences, from which the student can lay a necessary foundation for closer study. The suggestions here given may be applied and illustrated in a thousand ways. It is best, however, to be somewhat definite in the giving of hints as to the mode of procedure.

1. An Examination of Experience. Last summer most of you had a vacation. Many of you went into the country. You had certainly experience somewhere. Try to recall those experiences. What are they? What have you left in your mind as products of your summer vacation? For myself, I can think of some beautiful lakes, bordered by primeval forests. I can recall, in general, the main features of the road to the station, to the camp where we stopped. I can now image streams, trees, logging camps, and ground burned over by forest fires. I can see the carriage in which we rode, the boat that took us across the lake; in fact, I can recall in sequence a large number of mental pictures. How do these experiences appear to me now? What is it that I have of the lakes, of the trees, of the fish we caught, and of the large ones we lost? I wish to give the main body of these experiences a general name—*images*. I have now the images which make up a series of experiences taken from my summer vacation. Images that I probably gained through my eyes and ears; images of forms and faces of men and women that I saw. I can recall the names of places, the logs, the trees, the plants that I saw. I infer then that I have a series of related images. I did not have these experiences before last summer, and therefore they are to me new images. They were images gained from my stay by the lakes.

I have made this brief description in order to stimulate my students to similar collections. Take your pens in hand and write down the

images that you gained last summer, one after another. Did you gain anything else? If you did, can you call them to mind as products? Can you recall anything but images of sight and sound? If you can, what other thing came in with your experiences? When I ask you to relate these experiences, do they enter into your stream of thought one after another? What image begins the series? What follows? By holding the first image of the series, do not others follow? In what order? Is there any regular order? Is this statement true—all I have left in my mind of my vacation experience is a series of related images?

2. Experiences of Early Childhood. Can you remember the house in which you were born, in which you lived in early life? Have you an image of the land around the house? Of the rooms in the house? Of the faces you saw? How many of these early remembrances are you able to recall? What are these experiences to you? Anything except images? Do you remember the first day you went to school? The appearance of the schoolhouse? Have you an image of your teacher? Your schoolmates? Do you remember reciting your first lesson? If I should ask you to write your life, by naming a series of images from your earliest childhood to the present time, what would remain untold? What part do images play in your stream of thought?

3. Experiences in Reading. You have read a great deal, no doubt. What remains in your mind as product of your reading? (I should like to have you confine your experiences to the reading outside of the schoolroom.) Take some book that you enjoyed very much. What remains in your mind as a product of reading? What images do you recall? Many of you have read "Old Curiosity Shop." What can you recall of the book? Can you image the old shop? The old gentleman? Little Nell? What have you left except images? If the reading causes no images in your mind, what else would you have? Try to recall and relate your experiences in reading several books that you have enjoyed very much. The constant question is, What have you of that book now? What remains in your mind? What images do you recall the most easily? Did you gain these images while reading? What else did you gain while reading? What is reading? Read some good story and then recall the product.

4. Work with Your Hands. What work with your hands have you ever done? What can you cook? Describe, if you can, the process of baking bread. When I ask you to describe this process, what is recalled to your mind? You have the images of flour, of yeast, of dough, of the kneading, of putting the dough into the pan, and the pan into the oven. What else do you recall about bread-making? Recall as nearly as possible the principal things that you have made in your life, with this hypothesis in your mind, that, while making, you go through a process of imaging. Have you ever made a dress? Describe how you made it. How are you able to describe it? What is in your mind while you are in the act of describing the making of a dress? Compare the images you have gained by making things, and those you gained by reading. Which are clearer? Do you always image that which you propose to do? Recall one day's experience. Do you ever propose to do anything without first imaging the thing as done, and the process of doing?

5. Images Gained in School Work. (a) Please recall a selection of literature that you have studied. What images of it remain with you? Recall one by one the images as they appear to you while studying the bit of literature. How are the images related? Do you recall anything except images? What images are vivid? Does one image follow another in sequence? You have probably read "Paul Revere's Ride." Will you please recall this poem, and tell me the sequence of images you have? What is the first image? What is the second? etc., etc. What have you left of this poem except the images? You have studied Latin Literature. What have you left of Cæsar? Of Virgil? Can you follow, for instance, the series of images of the wars in which Cæsar engaged? The battles, geography, etc.? What have you left of this study that you cannot reproduce in images?

6. Images Gained in History. Will you please give me the most vivid images now remaining from your study of history? Those who have studied the history of Greece, what is the most distinct event of Greek history in your mind? Please recall your experiences in the study of Roman history. You have studied the history of the United States. How many can recall the history of the Revolution in a series of related images? What have you left

of this study except images? Describe the battle of Bunker Hill. What images do you recall? If you cannot recall images of events in history, what have you as a mental result of your study?

7. Geography. Please carefully recall some products of your study of geography? If geography is a description of the earth's surface, what have you now as recollections of this study? What other images have you of the earth's surface, and what have you now as recollections of this study? What other images have you of the earth's surface, gained by the study of geography? How many of you can image words alone from your study of geography? What is the difference between the images of a word and an image of a portion of the earth's surface? for instance, the image of North America, and the image of the word North America? When I write upon the board the name Greece, what does this name recall to you? Describe Greece. What is the use of a map? If you recall nothing but maps, what have you gained from the study of geography? Recall all the landscapes that you have ever seen, and those which you gained in the study of geography.

8. Comparisons between School Life and Life outside of the School. Consider questions very carefully. In which have you gained the greater number of images, in school or outside of school? Which images are more distinct, those gained in school or those gained outside of school? Which images have closer relations, those in school or those outside of school? Which images do you use more in expression, those gained in school or those gained outside of school? What is the difference between reading and study of text? In which process did you acquire the clearer images? Is it possible for you to sum up all you have ever learned in images? What have you remaining of study except images?

9. General questions. How did you gain these images on your vacation? Every time you see, do you have an image? Every time you hear, do you have an image? Every time you touch, do you have an image?

(To be continued.)

Department of Science

Wilbur S. Jackman Ira B. Meyers Charles W. Carmen

The course in nature study will include two lines of work: first, practical instruction in the subject-matter of science; second, the development, illustration, and discussion of methods of teaching the elements of natural science in elementary and secondary schools.

To this end a small area embracing an interesting and varied landscape near Winnetka has been selected for special observation and study. This has been done with a view to training the student in the methods pursued by the best schools in conducting field-work, and for the purpose of indicating how an area may be interpreted. The students selecting this course will be divided into groups of not more than thirty members each, and, in charge of teachers, will visit the field as often as may be necessary to obtain the proper data and materials for laboratory work.

The presentation of what the area affords will be from the standpoint of the landscape taken as an organism. Under this conception, every part observed will be considered in its qualitative and quantitative relations to the other parts and to the whole. The study will begin with a consideration of the organization and distribution of life as exhibited by the plants and animals, and will include an investigation of the causes that underlie present appearances. Therefore an examination will be made of the character of the soil, the amount and distribution of light and heat, and the circulation of the water.

The materials which the area produces will be treated in accordance with labora-

tory methods from the point of view of their function in the organization of the landscape.

The work of the plant, for example, is partly physical and partly chemical, and depends upon both the physical and chemical properties of the soil. It also bears similar relations to the sunshine. In a general way the same may be said to be true of the animal forms. Again, the soil acts as both a physical and chemical agent in its relations to the plants and animals. The methods of the several branches of science, biology, physics, chemistry, astronomy, meteorology, mineralogy, etc., will be used, therefore, as they seem to be needed in the proper interpretation of the natural history of the area.

The students will be expected to devote at least two hours per week to this part of the work, which will be arranged for on the afternoon program. For this purpose they will meet Professors Carman, I. B. Meyers, and Bass, according to the groups in which they may be placed. The general character of the work is indicated in the different syllabi that follow in this connection.

In the course on *Pedagogics of Nature Study* it is the purpose to present the philosophy of school-teaching in accordance with the demands of science work. This will be done by means of the lecture and round-table method, one hour each day in the forenoon program. All those who select this work are expected to take at least two hours' laboratory work per week in the afternoon.

The topics selected for discussion are included in the following outline.

Pedagogics of Nature Study

Wilbur S. Jackman

OBSERVATION

Conditions. 1. (a) Physiology—the senses (b) physical. 2. The function of observation in imaging; 3. Relation of observation to inference; to the imagination: 4. Place and scope in education.

References: *Relation of Arithmetic to Elementary Science, Educational Review*, January, 1893. *Nature Study for the Common Schools*, Jackman (Introduction).

Nature Pictures. 1. Sources; 2. Means by which they are created in the mind; 3. Nature pictures as a basis for the various so-called school studies; 4. The inter-relations of nature pictures in time and space.

References: *Nature Study and Related Subjects*, Jackman, Part I. *Nature Study for the Common Schools*, Jackman (Introduction).

Expression. 1. The function of expression in imaging; 2. The relation of expression to observation; 3. Use and limitations of painting and drawing; 4. Appropriate subject-matter for painting and drawing and its technical treatment.

References: *Representative Expression in Nature Study, Educational Review*, October, 1895. *Nature Study and Related Subjects*, Part I. *Nature Study for the Common Schools*, Jackman (Introduction).

Expression (Continued). 1. Writing, its function and place; 2. Writing, technical treatment; 3. Making, its function and technical treatment: 4. Modeling, its function and technical treatment.

References: *Nature Study and Related Subjects*, Jackman, Part I. *Nature Study for the Common Schools*, Jackman (Introduction).

Measurements. 1. The function of measurement in imaging; 2. The significance of form and proportion; 3. The origin and inter-relation of arithmetical processes; 4. The sources of subject-matter in arithmetic. The use and abuse of symbols.

References: *Relation of Arithmetic to Elementary Science, Educational Review*, January, 1893. *Nature Study and Related Subjects*, Jackman, Part I.

Reading. 1. The function of reading in imaging, its relation to observation; 2. Learning to read, technical treatment; 3. The tests of good reading matter, examples to be selected from the library; 4. Interpretations of nature study and literature.

References: *Nature Study and Related Subjects*, Jackman, Part I. *The Correlation of Science and History, Educational Review*, May, 1895.

Study. 1. Modes of study, the purpose of study; 2. Essential conditions for study, the function of the teacher; 3. The use and limitation of books in study; 4. The personal element in study.

The Recitation. 1. The purpose of the recitation; necessary preparation; 2. The mutual relations of the class and the individual in recitation; 3. The function of the teacher in the recitation; 4. General plan of the recitation; common errors.

The Art of Criticism. 1. The basis upon which a school should be judged; 2. The basis upon which a teacher should be judged; 3. The proper modes of testing pupils; 4. Results that may be taken as a trustworthy basis for judgment.

References: *The School Grade a Fiction; Educational Review*, May, 1898.

Moral Aspects of Nature Study. 1. What should be expected, from the standpoint of morality, of pupils at the age when they enter the high school? 2. Incidental relations of Nature Study to morality and general culture. 3. Cultivation of the Will. 4. Development of Good Will.

References: *Nature Study and Related Subjects*, Jackman, Part I. *Nature Study for the Common Schools*, Jackman. *Ethics and Evolution*, John Dewey. *The Monist*, April, 1898. *Evolution and Ethics*, Huxley, *Popular Science Monthly*, November and December, 1883.

The Round Table Discussions will deal with the methods observed in the practice school, and in the laboratory work of the afternoon. In these discussions the practical aspects of Nature Study will be considered under some of the following heads:

I. Field Work in Nature Study. The landscape as a moving picture. The landscape as an organism. Chapters in its history. Human development related to the landscape.

II. Color and Form in the Landscape.—Significance of color and form. Illustrated by work done by the children in the practice school.

III. The Landscape as a Scene of Activity. Activities of plants and animals; from the isolated seed to the all-related plant. Establishment of its relations with heat, moisture, light, growth of root, stem, and leaf. The plant's time and space relations; flower and seed. External and internal adaptations of the plants. Competition. Mutual support. Activities of animals. Conditions favoring colonization; soil, water, shores, rocks, lowlands, etc. Examples: A tree as a center of colonization. The aspects of water that invite colonization. The atmosphere. Migration and extinction of colonies. Relations between plants and animals. External and internal adaptations of the animal forms.

The Courses in Physics and Chemistry

Charles W. Carmen

The courses in physics and chemistry are intended to meet the needs of those teachers who desire to introduce physical science into the common schools. It will be the aim, during the session of the Summer School, to aid the teacher in getting the information, explanations, and apparatus that he most desires, and that is best adapted to his use.

Have you met difficulties during the past year's experience as a teacher? What are they? Have you wished to perform simple experiments, but were unable to provide the apparatus? Have you thought out any definite line of work? Do you wish such a line of work planned for you? Propounding and answering questions along these lines will be the nature of the work rather than a formal course in physical science. The phenomena of nature are so numerous that it matters little what branch we take up.

Considerable attention will be given to meteorology because it is a subject of unusual interest for nature study in the grades, the high schools, and for the advanced scientist. Many of the observations are easily made, and the general laws governing the predictions of weather bureaus are readily discovered. Another fruitful source of study is that which traces every change that is observed in the inorganic, organic, and organized world to solar energy. The subject, when properly presented, has never failed to arouse interest, even in the usually dormant mind.

While it will be the aim to keep the class-room and laboratory work in as close touch as possible with the field work in general, it is desirable to make a preparation in the class-room and laboratory in order that the best results may be accomplished in the field, hence the arrangement of the work as given below.

The laboratory work following that done in the field will be the tabulating of results and arranging them in a form for work in mathematics. What have we learned from our laboratory and field work? The results are to be condensed and recorded in the form most useful for future reference.

The subject of physics is largely the subject of measurements. To make measurements of any considerable value preliminary training is necessary. Therefore field work will be preceded by the use of such apparatus as is to be used in the field. It is planned that the first measurements in the field will be of length contemplating area and volume. These are to be followed by mass, temperature, quantity of heat, and magnetism.

The field work will be an application of the laboratory apparatus to field use. It is proposed to make measurements on the plat studied for the determination of its area, topography, angles of variation of different sections, variations of ground and water levels, heights, and circumferences of trees and leaf surfaces.

The study of chemistry is largely a study of the results of construction and destruction of chemical compounds. How are we to destroy and construct, in the laboratory, mineral and soil formations? It is contemplated that minerals and soils will be the first branch of field study.

Guided by the laboratory work, an intelligent collection in the field may be expected on the part of the student.

The following outline will give the student, in a condensed form, the general plan on which it is hoped to conduct the work:

The Course in Physics

I. Leading Principles.

1. A brief statement of the subject-matter.
2. Discussions of the plan of work proposed.
3. Laboratory work as a preparation for field word.
4. Field work.
5. Laboratory work upon data and material gathered in the field.
6. Discussion of the results obtained from field and laboratory.

NOTE.—A prominent part of the course is planned to be the outlining of methods for, and the actual construction of, inexpensive apparatus for grammar grade exercises (experiments).

1. (a) Standard units, reference to same, use of. (b) Restricted use of the term physics; relation of physics to biology, geology, chemistry, astronomy, mathematics; method and aim, theory, experiment, qualitative work; quantitative work; measurements. (c) General subdivision of the subject into the physics of matter, the physics of ether. Molar and molecular physics, including mechanics, sound, heat. Ether physics, including "radiant heat," light, electricity, and magnetism.

II. Introduction to Meteorology. (a) The province of meteorology. (b) Brief sketch of the growth of the study. (c) The modern contrasted with the early study of the subject. (d) Meteorological phenomena. (e) Meteorological intruments. (f) Construction and use of meteorological instruments. (g) Meteorological observations. (h) Barometer, barograph, thermometers, thermograph, anemom-

eter, anemograph, hygrometer, rain gauge. (i) History and growth of the signal service. (j) How to make weather maps. (k) How to read weather maps. (l) How to forecast the weather. (m) The study applied to animal and plant life. (n) The value of the study to commerce.

Introduction to Mechanics. (a) Simple machines. (b) Function of machines. (c) Animals as machines. (d) Plants as machines. (e) Observations on and study of such machines as levers, cord and pulley, windmills, water-wheels, cranes, elevators, steam engines. (f) Construction and use of simple mechanisms. (g) Aid to the industries of life.

Introduction to Sound. (a) Mechanisms for producing sound. (b) Hearing. (c) The uses of hearing. (d) Hearing "without ears." (e) Sources of sound. (f) Different kinds of vibrations. (g) Sound that is "noise" only. (h) Musical sounds. (i) Different kinds of sounds heard in the field.

Introduction to Heat (Molecular). (a) Nature of heat. (b) How related to matter. (c) Sources of heat. (d) Relation of quantity of heat to temperature. (e) Measurements of temperature. (f) Measurement of quantity of heat. (g) Molecular motion changed to mass motion. (h) Machines for producing heat. (i) Machines for expelling heat (ice machines). (j) Heat the primary form of energy in animal and plant growths. (k) The factor of heat in ventilation. (l) The factor of heat in the life of a universe.

Introduction to "Radiant" Heat and Light. (a) Ether dynamics. (b) The ether. (c) The radiometer. (d) Sunshine. (e) Measurement of sunshine. (f) Mechanical analysis of sunshine. (g) Heat, light, color. (h) Concentration of sunshine. (i) "Artificial" sunshine. (j) Sunshine and animal life. (k) Sunshine and plant life. (l) Indirect influence of sunshine on life in general.

Introduction to Magnetism. (a) Observations on magnets. (b) Magnetic substances. (c) Magnetometers and compasses. (d) Artificial magnetic regions. (e) Explorations in the field. (f) Magnetic observations in general. (g) Effect of magnetism on life.

Physics that May be Observed During the Daily Pursuits of Life.

III. Books of Reference. Elementary Physical Science: (a) Jackman, W. S.—Nature Study for Grammar Grades. (b) Jackman, W. S.—Field Work and Nature Study. (c) Jackman, W. S.—Nature Study Record. (d) Harrington, C. L.—Physics for Grammar Schools. (e) Woodhull, J. F.—Manual of Home-made Apparatus. (f) Woodhull, J. F.—First Lessons in Light. (g) Mayer, A. M.—Sound. (h) Mayer & Barnard—Light. (i) Barnard, C.—First Steps in Electricity. (j) Hall, E. H.—Elementary Lessons in Physics. (k) Bower, J. W.—Simple Experiments for Scientific Teaching. (l) Boys, C. V.—Soap Bubbles. (m) Perry, J.—Spinning Tops. (n) Bert, P.—Primer of Scientific Knowledge. (o) Hopkins, G. N.—Experimental Science.

For Special Reference. (a) Carman, C. W.—Outline of Course in Physics. (b) Chute, H. N.—Physical Laboratory Manual. (c) Chute, H. N.—Practical Physics. (d) Carhart & Chute—The Elements of Physics. (e) Crew, H.—Elements of Physics. (f) Davis, W. M.—Elementary Meteorology. (g) Daniell, A.—Principles of Physics. (h) Everett, J. D.—C. G. S. Units. (i) Hastings & Beach—General Physics. (j) Weather Bureau, U. S.—Publications.

The Course in Chemistry

I. Leading Principles.

1. A brief statement of the subject matter. (a) The general method of treatment in text-books; the method of using text-books for reference; laboratory and field chemistry versus text-book chemistry. (b) Restricted use of the term chemistry; relation of the subject to biology, geology, physics, astronomy, mathematics, theory, experiment, qualitative and quantitative work. (c) General subdivision of the subject into inorganic and organic chemistry. The study of homogeneous compounds—metallic, non-metallic; world-building before the advent of life. The study of organic and organized matter; world-building after the advent of life.

2. Discussions of the plan of work proposed.

3. Laboratory work as a preparation for field work.

4. Field work.

5. Laboratory work upon data and material gathered in the field.

6. Discussion of the results obtained from field and laboratory.

II. Subject Matter.

Introduction to the Study of Mineralogical Chemistry. 1. Chemical characteristics: (a)

Taste; astringent, sweetish astringent, saline, alkaline, cooling, bitter, sour. (b) Odor: alliaceous, sulphurous, fetid, argillaceous. (c) Solubility; water, acids, alkalies. (d) Fusibility; scales of. (e) Volatility; volatile, partially volatile, non-volatile.

2. Laboratory processes.
3. Field study and collections.
4. Laboratory study of collections.
5. Tabulating and condensing results for future reference.

Introduction to the Study of Soil Formations. 1. Mechanical separations: (a) Mineral. (b) Organic.

2. Physical and chemical separations: (a) Fluid, solid. (b) Separation of fluids into chemical constituents. (c) Separation of solids into chemical constituents.

3. A study of the properties of the chemical constituents.

Introduction to the Study of Animal and Vegetable Formations. 1. Physical and chemical separations: (a) Fluid, solid. (b) Separation of fluid parts into chemical constituents. (c) Separation of solid parts into chemical constituents.

2. A study of the properties of the chemical constituents.

III. Books of Reference. *Elementary Chemical Science*, Jackman, W. S. *Nature Study for Grammar Schools*, Jackman, W. S. *Field Work and Nature Study*, Jackman, W. S. *Nature Study Record*, Bower, J. W. *Simple Experiments for Science Teaching*, Roscoe—*Chemistry* (Science Primer Series). Collins, J. H. *A First Book on Mineralogy*, Faraday, M. *The Chemical History of a Candle*, Appleton, J. H. *Chemistry*, Memsen, I. *An Introduction to Study of Chemistry*, Remsen, I. *A Laboratory Manual*, Remsen, I. *Organic Chemistry*, Orndorff, W. R. *Laboratory Manual, Organic Chemistry*, Coit, J. M. *Chemical Arithmetic*, Cross, G. M. *Chemical Technics*, Williams, R. P. *Elements of Chemistry*, Williams, R. P. *Laboratory Manual*, Shepard, J. H. *Elements of Chemistry*, Wiley, H. W. *Principle and Practice of Agricultural Chemistry*, Church, A. H. *The Laboratory Guide*.

Study of Animal Life

Ira B. Meyers

The work in zoölogy will be confined largely to a study of œcological relations as determined by Chicago environs, and illustrated by the field about Winnetka.

The various features of a landscape—facing, altitude, soil, moisture, temperature, and vegetation—are factors in the problem of adaptation to the animal life of the area. It is the aim of the field work to observe conditions under which animal life exists in any given area, and to note the influence of constant and varying factors upon its habits, characteristics, and life history.

The museum and laboratory work aims to aid the œcological studies of the field by (a) closer and more detailed observation of minute forms and structures; (b) study of internal structures; (c) continued observation of living forms through aquarium and cage; (d) comparing homologous structures and functions of allied forms.

Physiographic features: Lake, sand, and pebble shore; shore bluff; prairie; swamp.

Botanical features. (See Botany Outline.)

Zoölogical groups: Insects; crustaceans; batrachians; reptiles; birds; mammals.

General observations: Forms found in each special physiographic feature: (a) Dominant forms. (b) Occasional forms.

Range: Forms unrestricted in extent of range. Forms restricted to a particular part of the area. Forms attracted by some physiographic feature of the area—permanent residents. Forms attracted by seasonal food—temporary residents.

Movement: Demands for movement; range; factors influencing movement. Modifications of organs of locomotion: (a) As affected by the different media. (b) As affected by some peculiar aspect of the same medium. (c) As modified by peculiarity of habit.

Laboratory: A study of organs of locomotion.

Museum: Comparison of organs of locomotion. Field or zoölogical study of locomotion of living forms.

Food: Condition of food: Liquid or solid. Character of food: Vegetable, animal, mixed. Vegetable food: Method of locating food. (a) Kind of plant. (b) Part of plant. (c) Effect of injury upon plant. Plant's attempt to resist

STRUGGLE FOR EXISTENCE.
Botanical Field at Winnetka.

injury. Length of time food part is available; relation to life of animal. Animal food: Methods of locating food: methods of securing food.

Laboratory: Study of sense organs.

Museum: Comparison of organs of prehension and mastication.

Field and Zoölogical Gardens—Animal feeding.

Protection: 1a. Adaptations enabling individual groups to maintain their position among the varied forms. (a) Forms adapted to area inaccessible to other forms. (b) Specially constructed homes or shields. (c) Special organs of protection. (d) Nauseous secretions. (e) Cunning or swiftness. (f) Color protection. (g) Without visible means of protection. 1b. Adaptations enabling groups to resist seasonal changes, such as temperature and moisture.

Laboratory and Museum: Study of protective organs and animal coverings.

Field Zoölogy: Study of life habits as related to means of protection.

Homes; home life of animals. (a) Living: Isolated, in pairs, in colonies. (b) Influences determining mode of living. (c) Living in specially constructed homes. (d) Dependent upon accidental shelter—crevices, holes, deserted homes, etc. (e) Changing growing vegetation into homes; insect galls. (f) Methods of caring for young. (g) Songs, call notes, etc.; purpose, methods of producing.

Animal life as related to man: Noxious and economic forms.

References: *Origin of Species*, Darwin. *Island Life*, Wallace. *Insect Life*, Comstock. *Animal Life*, Thompson. *Nature Study in Common School*, Jackman.

Botanical Field in the Winnetka-Glencoe Area.

I. Study of the Characteristic Plant Societies of the Region as They are Related to Topographic Features of the Region.

Crest of bluffs: Characteristic trees, shrubs, and herbs. Undrained depressions on bluffs. Characteristic trees, shrubs, and herbs. Slopes of ravines. River bottom. Stream bed.

Lake cliff: (a) Old cliff with an established vegetation. (b) Young cliff.

Present beach: (a) Lower beach. (b) Middle beach. (c) Upper beach.

Old beach ridges. (Ancient shore lines of Lake Chicago.) Depression between beach ridges. Swamp to westward.

Questions: Why such differences in flora? Are the conditions of the given area favorable for plants? What are the controlling factors in each case? How explain striking similarity between the Lake cliff flora and that of the sand dunes at Dune Park? Why is the cedar, pine, juniper combination characteristic of the Lake cliff area and not of other regions? Significance of present distribution of the sugar maple? the button bush? the shepherdia? the hop hornbeam? the wire-grass? the blue-grass? the mosses? etc.

II. Conditions Which Have Had Influence in Determining the Different Plant Societies at Winnetka.

1. Soil Conditions. Chemical nature of soil. Physical nature of the soil. Stability. Porosity. Capacity for obtaining water. Capillarity. Deliquescence. Capacity for retaining water. Amount of soil-water available for plant uses. Tenacity. Injury done by cracking of clay soil. Ease or difficulty with which roots enter soil. Differential weathering of bowlders in the soil. Acid excretions from roots of plants.

Questions, such as: What are the soil conditions most favorable for plants? What plant adaptations can be traced to soil conditions?

2. Atmospheric Conditions. Chemical nature of the atmosphere. Physical nature of the atmosphere. Water of the atmosphere. Movements of the atmosphere.

Questions: What constituents of the atmosphere are used by plants? How are these obtained? What influence does the amount of moisture in atmosphere have upon transpiration? Influence of air movements. What plant adaptations can be traced to atmospheric conditions?

3. Heat Conditions. Average temperature during growing season. Extremes of temperature in air and soil.

4. Light Conditions. Total amount of light received in various situations. Direction of light.

Questions: What differences in the plant societies may be due to differences in heat and light conditions? Significance of the distribution of the delicate mosses? Vernal habits of forest herbs? Account for layers in the vegetation of the forest. What difference in structure between plants grown in shade and those grown in direct sunlight?

III. History of the Different Plant Societies of Winnetka as it is Related to the History of the Topographic Features.

1. The original flora of each topographic feature.

2. The topographic changes which have brought about the present flora.

3. Changes going on at present which will influence the flora found at Winnetka. (a) Change from steep to gradual slopes. Increased stability of soil conditions. Accumulation of humus. (b) Widening of ravines. Increased exposure to heat, light, and wind. (c) Deepening of ravines. Lowering of underground water level in slopes. (d) Formation of wider flood planes, deltas, etc. (e) Filling in of swamps and undrained depressions.

4. The probable future of the flora associated with each topographic feature of the region.

Department of History and Literature

Emily J. Rice

The purpose of the courses in history and literature is to give special training in the selection of subject-matter suitable for use in elementary and secondary schools and the philosophy of methods of teaching these subjects. With this end in view, opportunities are offered for the study of historic material and for independent research and investigation of principles on which the teaching of history and literature is based.

The courses in this department are closely related to those in geography, art, dramatic expression, economics, and social science. The geographical laboratory is supplied with physiographic maps which will aid students in the interpretation of political and social data. Particular attention will be given to local history, and excursions in the city and vicinity will be made the basis for a study of economic and social conditions.

The department is supplied with a good collection of pictures, tools, and implements of primitive people, and with illustrations of the development of the industrial arts. The course includes a study of typical stories of different nations and periods of history; principles of presentation of these stories to children; relation of

literature to history and art; observation of model lessons; and the writing of stories.

Ancient civilizations will be studied in connection with the growth of the industrial arts, architecture, painting and sculpture, social life and government. The relation of geography to history and of occupations to social life and government will be brought out. The art and literature of each people will be studied as sources of knowledge, and the development of art will be an important feature of the work.

The growth of mediæval and modern civilization will be considered, including the history of the United States. The development of social and political institutions will be traced and a special study made of colonial industries.

I. Methods of Historical Study. Relation of history to present social conditions. Adaptation of subject-matter to stages of individual experience. Analysis of periods of history. Outline of course of study. Analysis of methods of study. Sources of history. Relation of geography, literature, art, and sociology of history. Special value of particular periods to history in a course of study.

References: *Studies in Historical Method*, Mary Sheldon Barnes. *Methods in History*, Macy. *Methods of Teaching History*, Hinsdale. *Methods of Teaching History*, Ed. by Stanley Hall. *Talks on Pedagogics*, Parker. *School and Society*, Dewey. *Course of Study in History and Literature*, Rice.

II. Ancient Civilizations—Egypt. Geographical conditions governing the development of primitive people. Nest-places of history. Egypt as type. Relation of structure and climate to development of people. Influence of building material of country upon its architecture. Principles of construction illustrated by the Great Pyramid. Early sculpture and painting in Egypt; its industrial arts. Plan of an Egyptian temple. Religious ideas as expressed in temples and tombs. Advancement of architecture, sculpture, and painting. Literary remains.

Refrences: *History of Art in Ancient Egypt*, Perrot and Chipiez. *Egyptian Archæology*, Maspero. *A Thousand Miles Up the Nile*, Amelia Edwards. *Pharaohs and Fellahs*, Amelia Edwards. *Conscience and Religion in Egyptian Art*, Petrie.

Greece—the Homeric Age.—The Iliad and Odyssey as sources of our knowledge of early Greek history. Relation of Mycenæan art to the Homeric poems. Agamemnon's palace. Industrial arts of the Mycenæan age. Social life in the time of Homer. Mythology. Place of the Iliad and Odyssey in the history of literature.

References: *The Mycenæan Age*, Menatt. *Cult of Greek States*, Farnell (mythology). *The Golden Bough*, Frazer. *Schliemann's Troy*, Burckhardt. *Gods of Greece*, Louis Dyer.

General view of Greece: Scenery, structure, climate, and productions. Effects of Greek geography upon its people in character, industries, and institutions. Special study of Laconia and Attica. What Greece stands for in history and on what basis its history should be studied.

Oriental ideas of government, Egypt as type. Government of the Homeric age. The Spartan theory of government. Spartan education. The Athenian government. Athenian education. The conflict with Persia and what it meant to history.

The Ionic type of Archaic sculpture. The Doric type. Early Greek painting. Greek vases. Effects of Persian wars. Persian ideas of life compared with Greek ideas. Architecture of the great age of Greece; the Parthenon; the Propylæa; the Erechtheum. Characteristics of the people shown by their building. The sculpture of the Parthenon. Other Athenian sculpture. Olympia and its contests. Delphi and Eleusis. Characteristics of the age of Pericles. Contrasts with our own age and lessons for it.

The Alcestis of Euripides. Origin of the drama. The Greek theatre. Later Greek sculpture. Causes of decline of art. Roman architecture. Pompeii.

References: *Greek History*, Busolt. *Handbook of Greek Sculpture*, Ernest Gardner. *The Art of Phidias*, Waldstein. Frazer's *Pausanias*. *Mythology and Monuments of Ancient Athens*, Harrison and Verrall. Von Rohden's article on Greek vases in Baumeister's *Denkmäler*. *The Greek Theatre*, Moulton. *History of Greek Sculpture*, Murray. *History of Greek Sculpture*, Lucy Mitchell.

Excursions in Greece, Diehl. *History of Greece*, Grote. *History of Greece*, Curtius. *Greek Education*, Davidson. *History of Greek Art*, Tarbell. *Pompeii*, August Mau.

III. The Rennaissance. Characteristics of period and value of study. Causes of another great period of art and literature. Feudalism and its influences on later times. Industrial conditions of feudal ages. Early Christian and Byzantine art.

Italy in the fourteenth century. Buildings of Florence. Sculpture and painting of Florence in the fourteenth century; the fifteenth century. Influence of Greek art. Relation of art and political history.

Causes of the power of Venice. Architecture of the city. Venetian painters of the fourteenth and fifteenth centuries. Causes of the decline of Venice.

The great names in the art of the sixteenth century. Influence of these artists upon later times. Causes of decline of art. Changes in industrial conditions. Influence of Italy upon France and England. The middle ages in a course of study. Connection with English and American history. The discovery of America.

References: *The Renaissance in Italy*, Symonds. *Handbook of Painting*, Kugler. *Italian Painters*, Morelli. Berenson's *Florentine Painters of the Renaissance*, *Venetian Painters of the Renaissance*, *Central Italian Painters of the Renaissance* and *Lorenzo Lotto*, *Michael Angelo*, Symonds. *Vasari*, Ed. by Hopkins and Blashfield. *Makers of Florence*, Mrs. Oliphant. *History of Mediæval Art*, Goodyear. *Discovery of America*, Fiske. *History of America*, Payne.

IV. History in Elementary Schools. Relation of historic industries and the handwork of children. The building instinct of children. Place of the study of historical architecture, sculpture, and painting. Modeling and painting in school. Value of tracing growth in art. Literature and art as a basis for the study of history. Study of pottery in school. Adaptation of history for children. Dramatization of stories for children. Value of the Iliad and Odyssey. Adaptation of periods of history to different grades. Special value of Greek history. Place of Roman history in course of study; of the Renaissance.

Methods in constructive work connected with history. Sociology in course of study. Observation of social environment. Methods of obtaining data in regard to present social conditions. Relation to study of local history. The field excursion in history.

V. Development of the Industrial Arts. Necessities of primitive labor: Food, clothing, shelter. Development of inventions. Tools and implements of savage and barbaric life. Houses and home life. Spinning, weaving, and sewing. Early language and writing. Mythology. The geographical conditions of America which influenced its aborigines. Life of savage tribes of America; their industrial arts. Life of lower barbarians. Location of tribes in country. Influence of environment. Primitive religious ideas. Folk-lore. Regions of America best adapted to develop primitive inhabitants. The country of the Aztecs. Industries developed. Comparisons with other tribes. Industrial arts, social life, government, and religion. The country of the Incas; their industries, social life, government, and religion.

References: *Primitive Culture*, Tylor. *Houses and Home Life*, Morgan. *Man Before Metals*, Joly. *Origins of Invention*, Mason. *Woman's Share in Primitive Culture*, Mason. *Discovery of America*, Fiske, Vol. I. *History of America*, Payne. *The Aztecs*, Biart. *Some First Steps in Human Progress*, Starr.

VI. Relation of Industries to Social Life and Government. Local history. Value of study of immediate environment. Appearance of locality before its settlement. Chicago as type. Story of Marquette and Joliet. Story of La Salle. The settlement at Starved Rock.

Beginnings of English occupation. Fort Dearborn. Industries of early Chicago. Settlement of region around the city. Growth of village. Excursions to historic sites and museums. City life compared with village life.

References: *La Salle and the Great West*, Parkman. *The Fergus Papers—Wauhun*, Mrs. Kinzie. *The Story of Tonty*, Catherwood.

Colonial History. Story of the Pilgrim settlement. Appearance of country. Occupations developed. Relation of these to geography of country. Methods of work. Village life. Comparison of industrial arts with those of our own time. Growth of colony. Cause of settlement and influence of industrial condition of England upon colonists. Similar study of the Puritan colony.

Appearance of an old Virginia plantation. Character and history of colonists. Geography of country. Occupations of people. Relation of these to geography of country. Industrial

arts. Comparisons with New England. Influence of occupations on institutions. Growth of colony.

Kind of country found by French colonists. Character of colonists, and history of settlement. Appearance of a typical colony. Occupations developed. Houses, home life, and industrial arts. Social life and government. Comparisons with New England and Virginia.

The New England town-meeting. Its origin and history. Its influence. Spread of colonies, and beginning of the representative system. The old Virginia county. Colonial legislatures.

Conditions in England which led to settlements in America. Industrial changes in England. Origin and growth of the representative system. Comparisons with Oriental, Greek, and Roman types of government. Effects of English ideas of government upon English colonies.

The government of France in the Old Régime. Causes which led to colonization. Character of colonists. Influence of country upon occupations and institutions. The French in the Mississippi Valley.

Differences between the French and English colonies in extent of territory, population, religion, relation with the Indians, military strength, and government. Causes of conflict between them. The Seven Years War. Relation of geography to conflict. Frontier lines.

References: *English Colonies in America*, Doyle. *English Colonies in America*, Lodge. *Beginnings of New England*, Fiske. *Old Virginia and Her Neighbors*, Fiske. Parkman's works. *Civil Government*, Fiske. *American Political Ideas*, Fiske. *American History Told by Contemporaries*, Hart.

Industrial Development of the Nation. Causes of struggle with England. Literature of the Revolution. The study of wars in history. Geographical basis of study of wars. Meaning of "Critical Period." The Federal Convention.

Early relation to foreign powers. Gradual gaining of independence. The westward movement of people. Routes of travel. Effects of geography. Frontier lines. Influences which have tended to strengthen the Union.

Inventions and their influence. Belated industries and regions. Present industrial condition. Relation of industries to institutions. Relation of institutions to development of literature and art. National problems.

References: *History of the United States*, McMaster. *History of the United States*, Schouler. *History of the United States*, Henry Adams. *The Critical Period*, Fiske. *Rise of the Republic*, Frothingham. *Influence of the Frontier*, in *Herbert Year Book*, 1899.

Geography

Zonia Baber Wallace W. Atwood

The work of this department in the Summer School has been so planned that two great ideas, prominent in modern geographic thought, may be emphasized. One of these ideas deals with the influence of geographic environment upon man; the other with the evolution or continual change of that environment. A full and sympathic appreciation of our natural surroundings cannot be attained without a knowledge of their history and an understanding of their influence upon the settlement and development of the region.

In the *Study of the Continents and Islands* it is proposed to give a broad, comprehensive view of the great land masses of the earth, picturing the chief physical features of each and showing how these physical features together with the climatic conditions influence the settlement and development of the different geographic provinces of each continent.

Throughout the work of this course, sand and chalk modeling will be illustrated and their use in the teaching of geography shown. The political and commercial phases of geographic work will also receive due consideration.

The study of *Geographic Processes* will deal with the changes which land-forms are continually undergoing. These changes will, so far as possible, be studied in the

THE DUNES AT DUNE PARK, INDIANA.

field, and the indoor work developed from actual observations made by the class.

The region about Chicago offers many unusually good opportunities for field work, and frequent excursions from the city will be made.

At Winnetka and Glencoe, the origin and growth of gullies, and all the processes associated with valley development, may be studied. Along the west shore of Lake Michigan, north of the city, the action of the waves and the resulting shore line forms are illustrated, while bordering the great Chicago flat are the ancient shore lines of "Lake Chicago." At the south end of Lake Michigan, in northern Indiana, dunes have been developed on a magnificent scale; the Pleistocene or glacial drift formation, including terminal and ground moraines, is within easy reach; while the underlying rock formation of the region is well shown along the drainage canal, in the numerous quarries about the city, and at "Stony Island."

It is the aim also in working out with the class the geography and geology of the Chicago region, to make each student familiar with the methods of field work and field teaching, so that afterwards any local field may serve as a basis of instruction.

OUTLINE OF FIELD GEOGRAPHY.

I. Field Studied — Winnetka-Glencoe regions.

Special Topics—Weathering and erosion by running water, including the soil-making processes; the different kinds of soil; the origin and growth of a gully: securing of a permanent stream; work of stream in eroding, transporting, and depositing; valley-forms in youth, maturity, and old age; general topographic effect of valley development; land-forms resulting from stream deposition.

II. Field Studied—Shores of Lake Michigan.

Special Topics—The work of waves, winds, and littoral currents, including origin and nature of waves; erosion by waves; explanation of the lake cliff; depositional forms along the shores, i. e., bars, hooks, spit, etc.; ancient shore lines about Chicago; development of dunes; relation of vegetation to origin and growth of dunes; influence of dunes on vegetation; explanation of the great dune region at south end of Lake Michigan; dune topography, and migration of dunes.

III. Field Studied—Stony Island, Drainage Canal, and Quarries.

Special Topics—The underlying geographical formation, including origin of underlying formations; structure and history of Stony Island, and influence of geological structure on topographic forms.

IV. Field Studied — Purington and Barrington.

Special Topics—Glaciers, glacial work, and glacial formation, including types of glaciers; formation and movement of glaciers; erosion, transportation, and deposition by glaciers; forms of glacial drifts; i. e., terminal moraines, ground moraines, drumlins, eskars, valley trains, outwashed plains, etc.; their recognition and classification.

References: *Geography of Chicago and Its Environs*, Bulletin No. 1, Geographic Society of Chicago, Salisbury & Alden. Gilbert's *Henry Mountains*, Washington, D. C. *The Œcological Relations of the Vegetation of the Sand Dunes of Lake Michigan*, University of Chicago, Dr. Cowles. *An Introduction to Geography*, Scott. *The Drift*, Salisbury, *Journal of Geology*, Vol. II. *Shoreline Topography*, Gulliver. *Geography of the Devil's Lake Region*, Salisbury and Atwood.

Outline of Continental Geography

I. North America.

1. Appearance. (a) Extent. (b) Shape. (c) General Topography.

2. Eastern and Western highlands. (a) Great central plain. (b) Special topography.

3. Glaciated regions. (a) Mountainous regions. (b) Plateaus. (c) Plains, coastal; river, flood. (d) River basins. (e) Climate.

4. Wind. (a) Temperature. (b) Moisture. (c) Vegetation.

5. Forests. (a) Prairie. (b) Western plains. (c) Deserts. (d) Animals—wild, domestic.

6. Relation to surface and climate. (a) People. (b) Political divisions.

7. In country. (a) Industries. (b) How promote progress of civilization. (c) Influence of country life on people.

8. In cities. (a) Location—why? (b) Future growth—why? (c) Commercial. (d) Political. (e) Industries. (f) Influence of cities on human progress. (g) Influence of city life on the individual.

9. Educational institutions. (a) Political institutions. (b) Exports, imports, highways.

10. General view of evolution of North America. How introduce a continent? Pupils' use of modes of expression, sand modeling, chalk modeling, drawing, painting, etc. Use of weather maps, crop bulletins.

References: Stanford, *Compendium of North America*. Reclus, *Bird's-Eye View of World*. Reclus, *Earth and Its Inhabitants, North America*. Longman, *School Geography*. Longman, *Physical School Atlas*. Davis, *Physical Geography*. Shaler, *Our Continent*. Farr's *Physiography*. Shaler, *Nature and Man in America*. *Encyclopedias*. *U. S. Geological Surveys*, from 4th to 12th, inclusive. Whitney. *United States*.

II. Comparison of North America with South America, Eurasia, Africa, Australia.

1. Size; shape. (a) General plan of continents. (b) Topography, mountains, plains, etc. (c) Simple drainage slopes. (d) Special drainage areas. (e) Climate. (f) Vegetation. (g) People.

2. Distribution in relation to topography. (a) Industries. (b) Highways—natural; made by man. (c) Cities. (d) State of civilization of people—cause. (e) Our relation to other nations.

References: Mill, *International Geography*. Stanford, *Compendiums of Continents, South America, Eurasia*. Reclus, *Earth and Its Inhabitants*. Reclus, *Bird's-Eye View of World*. Mill, *Realm of Nature*. *Encyclopedias*.

III. Islands of the World.

1. Distribution. 2. Formation. (a) Continental—location. (b) Oceanic.

1. Volcanic—location. 2. Coral—location. 3. Surface. 4. Climate. 5. Products. 6. People. 7. Present interest in islands. Relation to commerce. Division of control of islands among great nations. 8. Special attenton to Hawaii, Philippines, West Indies.

References:

Islands—Reclus, *New Physical Geography, The Ocean*. Reclus, *Oceanica*. Stanford, *Australasia*. *Philippines*—Same as above, also Reclus. *Earth and Its Inhabitants*. *National Geographical Magazine*, '98. Reclus, *Bird's-Eye View of the World*. *Forum*, July, '98. *Current Literature*, October, '98. *North American Review*, September, '98. *Britannica*—See Index.

Hawaii—

Dutton, *Hawaiian Volcanoes*. United States Geological Survey, Fourth Annual Report, 1882-8. Wallace, *Island Life*. Alexander, *Islands of the Pacific*. Dana, *Characteristic Volcanoes*. Mrs. J. S. Bishop, *Hawaiian Archipelago*. Maxwell, *Lavas and Soils of Hawaii*.

Cuba and West Indies—

C. Hill, *Geology of Cuba*. Bulletin, Vol. XVI., No. 15, of Museum of Com. Zo., Cambridge. *National Geographical Magazine*, May, '98. Reclus, *North America*. *The Earth and Its Inhabitants*. Stanford, *Compendium—North America*. Reclus, *Bird's-Eye View of the World*. *Britannica*—See Index.

IV. Distribution of Sunshine.

1. Change of place and time of sunrise and sunset here—cause. 2. Cause of variation of length of day. 3. Meridianal movement of sun. 4. Relation of change of the angle of sun's rays to the seasons. 5. Effect of change of length of day at different places on earth. A knowledge of mathematical geography an essential in imaging continental landscapes.

References: Jackson, *Astronomical Geography*. Newcomb, *Popular Astronomy*. Huxley, *Physiography*. Gregory, *Elements of Physiography*.

V. Winds and Ocean Currents.

1. Winds of this region. (a) Direction—relation to barometric pressure. (b) Temperature. (c) Velocity. 2. Study of weather maps of U. S. (a) High areas. Low areas of pressure. (b) Isotherms. 3. Terrestrial winds. (a) Trade; counter trade; polar; monsoons. (1) Direction—constant or variable—cause? (2) Temperature. (3) Moisture. (4) Relation of winds to topography. (5) Relation to distribution of life. (6) Relation to man. 4. Ocean currents. (a) Location; movement; temperature; density. Effect on continents. Relation to life distribution—cause?

References: Davis, *Elementary Meteorology*. Davis, *Physical Geography*. Ferrell, *Popular Treatise on the Winds*. Waldo, *Elementary Meteorology*. Geikie, *Physical Geography*. Mills, *Realm of Nature*. Archibald, *The Story of the Atmosphere*. Gregory, *Elements of Physiography*.

VI. Distribution of Man. Relation of History to Geography.

1. Effect of structure and climate on man's development. 2. Growth of civilization in hot, temperate, and cold countries. 3. Relation of mountains to the early development of man. 4. Relation of protected river valley, of islands, to early civilization. 5. Value of forest regions; of prairie regions to man's development. 6. Regions of earth's surface best adapted to early development of civilization. 7. Present geographical distribution of man according to advancement. 8. Location of white, yellow, and black types. 9. Distribution of tribal governments, of monarchies, of republics. 10. Conditions for the development of a republican form of government.

References: Herbertson, *Man and His Work; an Introduction to Human Geography.*

Syllabi on Applied Mathematics

George W. Myers

It is a matter of common observation and the occasion of no little concern to schoolmen that the brightest mathematical students, when trained exclusively by text-book methods, are powerless to apply their mathematical knowledge to practical affairs. So soon as meaning is attached to symbols many expert mathematicians, indeed, are thrown into hopeless confusion. The foes of mathematical study in the schools have no difficulty, therefore, in finding an abundance of examples to substantiate their contention that mathematics is the most useless of all studies. It is believed that this deplorable condition has been brought about largely by the friends of mathematical study in aiding, by practice if not by precept, in the isolation of mathematics from other subjects of study, thereby divorcing mathematics from its applications and treating it as so much pure logic.

No thoughtful scientist can desire for a moment to discredit the value of the work of the pure mathematician. The history of science shows too well how likely the results of the mathematical logician are to find important application in the realm of useful knowledge, and how great the service to science is which these applications sometimes render. The application of the theory of the conic section to the planetary orbits, after Kepler found these orbits to be conics, will suffice to show how the results of abstract mathematical research have advanced scientific knowledge farther at a single stride than centuries of patient observational inquiry has been able to do, before the discovery of the applicability of the theory. But this same history proves that mathematical advance has much more frequently been brought about by the solution of problems met in the pursuits of natural science than has the discovery of new possibilities of applying mathematics brought about scientific advance. Furthermore, comparatively few who study mathematics in the public schools ever become, or desire to become, mathematical experts in any high sense. Most persons study these branches in the hope that they will be of help in the mastery of other fields of mental activity. To these persons mathematical study is of value chiefly in defining and clarifying the ideas, and in organizing and relating the facts and phenomena of the physical world. It is thought, therefore, that the mathematical sciences will take on a newness of life by bringing the elementary stages of their study back to the original mooring, by presenting the foundation principles as means of revealing certain aspects of the world of physical phenomena.

But as all definite ideas must reach the

mind through the senses, even the prospective mathematical specialist can best begin his study by laying a broad and solid foundation from materials drawn from the world of concrete phenomena. He is able thus to lay a firmer and more enduring hold on those central truths of his science, from which his later resources are largely to be drawn. This method of approach, by exalting psychological above logical requirements, conforms to the pedagogical principle that the determining factor for both matter and method is the learning mind rather than the subject of study. The needs of both a general and a special training are thus seen to be identical, so far as the foundation is concerned.

In the following syllabi the aim has been to make the needs of the learning mind the organizing idea. No attempt has been made, therefore, to distribute the subject-matter in any mutually exclusive way under the various special headings. What is suggested in the astronomical syllabus is quite as much mathematics as astronomy. The class-work will be based as largely as possible under the circumstances upon observational data taken in the open field, or under the open sky, by the members of the training class.

It is not intended to teach upon all topics suggested in the accompanying outlines during the summer. Such special topics will be selected for study as seem best suited to the needs and wishes of the class after it has met.

Syllabus on Astronomy

Lecture and Lesson I.

Topic: A Preliminary Survey of the Sky.

1. Rules for recording.
2. The fifteen brightest stars visible in Chicago. Magnitude in sense of brightness defined.
3. Colors of these stars.
4. Allineations and triangulations on neighboring stars for purposes of identification.
5. Various methods in use for designating the stars.
6. The constellation of the Great Bear. The Dipper. The Pointers. Polaris. The Guards. The Lesser Bear. The Dipper in the Lesser Bear. "Measuring Sticks" for star distance.
7. The constellation of Cassiopiæ's Chair. The equinoctial colure. Siderial time. Determination of the meridian.
8. The zodiacal constellations.
9. Directions for observational studies.

Lecture and Lesson II.

Topic: Observational Study of the Sun.

1. Study of solar heat. (a) Heat at focus tested experimentally for a terrestrial source. Laws I., II., and III. (b) Heat at focus for solar rays. Laws applied to sun's heat.
2. Sunlight studied experimentally. Images formed by interstices between leaves. (a) Sunlight compared with artificial light. (b) Sunlight compared with moonlight or starlight.
3. Other measurable effects of solar rays. Chemical effects. Magnetic effects.
4. Observational study of the globe of the sun.
5. Positions and motions of the sun.
6. Make a drawing from day to day of a sun-spot.

References: Young's *The Sun;* Ball's *Story of the Sun.*

Lecture and Lesson III.

Topic: Observation and Study of the Constellations, Stars, Time, etc.

1. The zodiacal constellations and signs. Uses.
2. The zodiacal light. Counter glow.
3. Other conspicuous constellations.
4. Estimation and determination of time, from star observations.
5. To locate the meridian of a place astronomically.
6. Apparatus needed.

References: Upton's *Star Atlas;* Schurig's *Atlas:* Poole's *Planisphere;* Young's *Uranography.*

Lecture and Lesson IV.

Topic: Observational Study of the Moon. (Opera glass.)

1. Look up almanac date of new moon. Begin observing moon as soon thereafter as possible.

2. Face appearance (both day and night). (a) Color and color variation of moon's face. (b) The crescent itself. (c) Markings upon the moon's face drawn.

3. The moon's motions. (a) The motion toward the west. (b) The motion toward the east. (c) The motion of rotation.

4. The moon's path among the stars and orbit.

5. Points of the compass. Measure the moon's altitude and azimuth.

6. Estimate the moon's right ascension, declination, longitude, and latitude (celestial). Equinoxes.

7. What light do your lunar studies throw on the following from Barnaby Rudge? "It was a fine dry night, and the light of a young moon, which was then just rising, shed around that peace and tranquillity which give to evening time its most delicious charm."

References: Howe's *Descriptive Astronomy;* Poole's *Lunar Atlas.*

Lecture and Lesson V.

Topic: Observational Study of Planets, Bright Stars, Meteors, Clusters, etc.

1. Methods of naming these objects.
2. Colors of planets and stars.
3. Brightness and steadiness of light.
4. Positions of planets from week to week.
5. Location and study of meteor paths.
6. The planets themselves.
7. Look up a conjunction in the almanac, watch, and describe it.

References: Ledger's *The Sun; Its Planets, etc.;* Jayne's or Ayer's Almanac.

Lecture and Lesson VI.

Topic: The Common Almanac.

1. Brief description of standard ephemerides.
2. Compilation of the common almanac.
3. Use of the almanac.
4. Column headed "Aspects of the planets, etc."
5. Compare sun's declination for July, 1900, of Old Farmer's Almanac with Ephemeris values.
6. Examination and explanation of Calendar page of Jayne's Almanac.
7. Historical items relating to common almanac.

References: Jayne's, Ayre's, *The Old Farmer's,* the *Connecticut,* or the *New England* almanacs. Articles on Almanac in *Popular Astronomy,* Vols. II. and III., by MacFarland.

Lecture and Lesson VII.

Topic: Observational Studies of Variables, Double Stars, the Milky Way, Zodiacal Light.

1. Stars of Great Dipper and Little Dipper arranged in orderly sequence of brightness.
2. A bright short period, variably arranged in a sequence with neighboring stars.
3. Color and color change from one time of day to another, from star to star.
4. Doubles identified and studied.
5. Trace and dilineate the Milky Way.
6. Identify and examine nebulæ and clusters. (Telescope.)
7. Study the constellation of Leo with an opera glass or a small telescope.
8. Mars' and Venus' change in brightness dependent upon the position in orbit.

References: Bowen's *Astronomy by Observation,* and Serviss' *Astronomy with an Opera Glass.*

Lecture and Lesson VIII.

Topic: Home-made Apparatus, Globes, Maps, Charts, etc.

(1), Meridian mark; (2), Gnomon; (3), Crude Altazimuth; (4), Tycho's quadrant; (5), The Cross-bar; (6), Transit Tube; (7), Home-made equatorial; (8), Foucault's pendulum and model; (9), globes filled out by student; (10), Maps and charts drawn by student; (11), Frame to catch image of sun; (12), Rogers' star finder; (13), Latitude box; (14), Frame to show varying brightness of solar disc.

Syllabus on Arithmetic

I. Qualifications of the teacher of arithmetic.

1. In mathematics. 2. In physical or natural science. 3. In psychology. 4. In pedagogy.

II. Subjects to be thoroughly taught.

1. Combinations of numbers up to 100. 2. The fundamental operations. 3. Fractions, common and decimal. 4. Greatest common divisor; least common multiple and factoring. 5. Compound numbers taught objectively. 6. Simple proportion and but little, if any, compound proportion. 7. Percentage and the more common cases of interest.

III. Subject matter, which should be omitted, or shortened, or postponed.

1. Omit all of the apothecaries' weight and English money except tables. 2. Most of commercial arithmetic and compound propor-

tion. 3. Stocks and bonds, insurance, exchange, partial payments, annuities, etc. 4. Replace nearly all of what is called advanced arithmetic by algebra and geometry.

IV. Other matters which should be dropped or abandoned.

1. Unnecessary definitions and rules not reached as generalizations. 2. All artificial problems. 3. Long and tedious addition and subtraction problems. 4. Abstract problems depending upon very small fractions. 5. All mathematical conundrums and problems whose language is beyond the pupils. 6. All but a reasonable number of "money problems," and most purely technical problems. 7. The time thus saved should be put upon practical applications of algebra and geometry.

V. How should arithmetical subjects be taught?

(1) Objectively, (2) with mathematical laboratory, and (3) through measurement.

VI. Various ways in which arithmetical processes may be taught.

(1) By teaching figures instead of numbers; (2) by using objects of no intrinsic interest; (3) by mersuring. (See *A Study in Measuring Quantity*, under Topic V.)

Syllabus on Geometry

Unless other than logical claims can be urged in favor of the study of geometry its place in school curricula may well be taken by more useful studies. That geometry has a high practical value is clear from the fact that its central truths are indispensable to successful study in any of the following lines:

1. In nature study; (2) in surveying, both plane and geodetic; (3) in the theories of equilibrium and of motion; (4) in strength of materials; (5) in hydraulics, and (6) in astronomy.

Outline of Work Needed to Interpret Facts Relating to the Chosen Tract

1. Introductory questions. 2. Problems in pacing. 3. Form of tract selected for study, both as a whole and as to its parts. 4. Area of surfaces upon it. 5. Topographical features. 6. Ranging and measuring lines upon the tract. 7. Areas of wind surfaces of trees and structures upon it. 8. Test any structures as to orientation and stability. 9. Value of some of the large trees for lumber. 10. Rate at which streams are transporting soil and silt to outlets. 11. Cost of draining and filling. 12 Cost of removing the soft earth and puddling the bed of a pond for an artificial lake.

In connection with astronomy, geometry will furnish valuable information of the sort suggested under the following headings:

1. Location and fixation of a reference meridian. 2. Determination of the latitude and longitude of points of reference. 3. Amount of solar heat incident upon the surface of the tract hourly, daily, yearly. 4. Energy to which the above is equivalent. 5. Quantity of sunlight incident upon the tract. 6. Diurnal variations and disturbances of the magnetic needle. 7. Study of *seiches* in Lake Michigan. 8. Problems relating to the strength of timber from the tract.

Aid Requested from Other Departments

All departments are requested to aid in the collection of material.

From physics: An experiment to show the amount of solar heat and light incident upon a given area of the earth's surface in a given time.

From botany: Explanation as to how to obtain the evaporating surface of the foliage of a green tree.

Geometry must be taught more with reference to its central principles and less with a view to securing logical beauty and completeness. Nearly all of geometry is based upon half a dozen or so fundamental principles; these principles stated and discussed.

The order in which the principles of geometry should be taught is suggested by the subdivision of— 1. Intuitional geometry. 2. Observational geometry. 3. Formal geometry.

Each of these branches will be explained and discussed fully.

Syllabus on Algebra

An arrangement of subjects similar to the one given here would furnish a much better course of study in mathematics than does the customary sequence.

Number. Arithmetic. Arithmetic and algebra. Algebra. Algebra and analytic geometry. Intuitional geometry. Observational geometry.

Observational geometry (with simple reasoning). Formal geometry and beginning trigonometry. Trigonometry, with modern geometry.

The guiding principle is to begin the new subject always before the old one which leads to it has been completed.

Algebra is only arithmetic extended by the introduction of the following new ideas:

1. The use of letters to represent generalized number. 2. The use of the minus sign as a symbol of quantity. 3. The equation as a tool for the solution of problems. 4. The use of fractional and negative exponents. 5. The use of irrational numbers. 6. The use of the variable and its limit.

The sequence and manner of presenting these new ideas should be such that the motive for each shall be felt from the beginning. This can be done best by taking the equation as the organizing and developing idea for both matter and method in algebra.

Many of the operations of arithmetic must be restudied in algebra in the light of these new ideas.

The subject of factoring, which is so important and so troublesome to the learner, as also to the teacher, may be developed easily from three simple principles.

The theory of exponents and logarithms should be shown to rest upon these four elementary principles:

$$a^n \times a^m = a^{m+n};\ a^m \div a^n = a^{m-n};\ (a)^{mn} = a^{mn},$$
$$\text{and } (ab)^n = a^n b^n,$$

where m and n may be integral, fractional, positive, or negative. These principles should be carefully taught and their true relations to these theories clearly seen by the pupil.

The solution of the quadratic equation, and particularly of simultaneous equations depending upon quadratics, is very greatly aided by graphical methods.

Practical applications to second degree simultaneous equations arising out of practical problems.

Practical applications arising out of the geometry and trigonometry needed to render the selected area intelligible to grammar and high school pupils.

The formulas for stresses in beams, in columns, for flow of water, and for other subjects treated, in the strength of materials and hydraulics, furnish many instructive applications of algebraic principles, and should be freely drawn upon by the teacher.

Mathematics in the Primary Grades

Gertrude Van Hoesen

The chief purpose of the following part of the course in mathematics is to show the place and function of arithmetic in the primary grades. The outline presents various phases of work illustrating how essential an understanding of the fundamental principles and processes of arithmetic is in the most common affairs of life. Within the school, it is quite as essential that the child's work in arithmetic should be closely related to his life and interests. But it must be proved that such work is not only more interesting to the child, but also more educative.

The work in the outline below appears in an unrelated form, and is intended only for use as reference in the classroom discussion.

Discussion of methods of teaching numbers:

There are three ways—one prevailing, one in partial use, one which has never been fully carried out in any school.

The first method includes the notation and numeration of figures; adding, subtracting, multiplying, dividing; committing tables to memory; doing isolated problems; following a so-called logical order from adding to banking; learning rules and following them; learning definitions without understanding them.

In the second method blocks are used and other objects, such as shoepegs, sticks, and colored dishes; this includes counting, marking, and picturing. The objects have no interest beyond their mere use,

and the results have no value to the child. Yet the constant drill in comparison and the finding of the ratios of actual quantities give the child a certain power in mental imaging. This is a great improvement upon the mere memorizing of the names of figures, and the logical following of unpedagogical rules.

In the third method number is used for the legitimate purpose of measuring quantities that must be measured in order that conclusions sought by the pupils may be reached—not numbers for numbers' sake, but for their use.

It will be the endeavor, in this course of lectures, to use the third method, and to show that in order to teach science in its various branches—geography, which requires knowledge of distance, area, volume—history, in which dates, census records and the arts and industries of people are studied and compared—and manual training, which depends upon accurate measurements—it is absolutely necessary to teach number.

It is impossible to outline in this syllabus how number is used in teaching all of these subjects, but the following brief examples illustrate its use in geography, manual training, and physical training:

I. Geography.—This work will be used only when the results of such comparisons are of immediate practical use in geographical imaging.

Definite measuring in geography necessitates the use of — 1. Linear Measure.—The estimation and comparison of distances, length of coast line, length of rivers, height of mountains, depth of oceans. 2. Square Measure.—Area, comparative sizes of river-basins, continents, food areas, mining and forest areas. 3. Measure of Bulk and Volume.—Estimation and comparison of the amounts of material carried down by rivers in a day, month, or year. 4. Measure of Force and Energy.—Comparative temperatures and atmospheric pressures, etc. 5. Measurement of Time.—Estimation of distances in relation to standard rates of travel.

Climate.—All the facts gathered from the daily records concerning the temperature, direction of wind, rain and snow, length of day, etc., are valuable as data only as they arouse in the mind of the child an approximately accurate idea of local climatic conditions. Yet the constant accumulation and comparison of these facts bring about the use of all the fundamental operations of arithmetic, and give the necessary drill in the manipulation of figures. Through the interest in these observations, skill is acquired at the least expense of time and effort.

II. Manual Training.—The first step must be the working-drawing or plan of the object to be constructed; estimation of cost of suitable materials. The second step is the execution of the plan; for instance, the children need a pencil-box and decide that the dimensions may be 9x3x2 inches, and the material a certain kind of wood. The working-drawing consists of three rectangles; the first, 9x3 inches, represents the top and bottom; second, 9x2 inches, represents the sides; the third, 3x2 inches, represents the ends.

1. Compare length, breadth, and height. How many square inches of wood will actually be required to make the top and bottom? The sides? The ends? The entire box? If the board from which you cut the wood is 12 inches wide, how many inches of board will be needed when you reach the manual training room, allowing two inches between pieces? How many inches of board must necessarily be discarded? Knowing the cost of wood, estimate cost of material for box.

2. What theorems in geometry that the class can readily see are demonstrated in making this box? (a) From a point in a straight line one and only one perpendicular can be drawn; and (b) Converse of "a." (c) All right angles are equal. (d) Two straight lines perpendicular to the same straight line are parallel. (e) Converse of "d." (f) Two rectangles having equal bases and equal altitudes are equal. (g) Two rectangles having equal bases are to each other as their altitudes; *i. e.*, comparison of bottom and side. (h) Two rectangles having equal altitudes are to each other as their bases; *i. e.*, comparison of side and end.

NOTE.—As the articles needed become more difficult in construction, the problems become

proportionately difficult both in arithmetic and geometry.

III. Physical Culture.—Consideration of growth and exercise as a foundation for the study of hygienic and sanitary conditions.

Accurate physical measurements of children in October, January, and June. Height, weight, chest measurement, and chest capacity necessitate the use of measures of length, weight, and bulk. Compare the measurements of a normal child made by the Child Study Bureau. Chest measurement, preceded by study of properties of air, examination of exhaled air, test for carbonic acid gas. Problem: What is the average amount of air inhaled in one breath?

The new units are gills, pints, quarts, and gallons. Experiment: Use a gallon jar scaled on one side; invert over a pan of water and draw out as much air as possible in one inhalation through a rubber or bent-glass tube. What is the amount inhaled by each member of the class? Amount inhaled by the entire class? Average amount inhaled by each person in one inhalation? How long would it take to exhaust the air in the room if none of it were rebreathed? A bedroom is ten feet square and eleven feet high. How long would the enclosed air supply two persons? What would take place in the air if the room were unventilated?

Circulation: Count the number of heart beats and pulsations in wrist and temple per minute. Do they correspond? Find average for class. The blood is about 1-13 of the weight of the body (Foster). It has been estimated that at each systole the heart sends out 6.3 ounces of blood (Martin's *Human Body*). How much blood passes through the heart in one minute? One day? How many heart beats are necessary for all the blood in your body to pass through? Relation of pulsation to respiration: How many respirations in a minute? How much blood do you purify in one minute? What part of the air is oxygen? Then, what amount of oxygen do you use in one respiration?

All points will be illustrated by the work of the children in the various grades, as in the following outline, in which the function of arithmetic in the study of the home is shown.

But on account of limited space only those forms of mathematics in most common use in daily life will be suggested, and that in the briefest possible way.

IV. Equipment of the Home.—1. The number and value of the utensils necessary in the kitchen. 2. The number and value of the dishes necessary for proper service. 3. The amount and value of napery, tablecloths per yard. 4. Napkins per dozen. 5. Carpeting per yard. 6. Wallpaper per bolt. 7. Upholstery per yard. 8. Bed linen per yard. 9. Furniture.

Food.—(Note problems in chemistry and physics involved.) Hygienic dietary. Physiology of digestion. Relation of constituents of food to nourishment which they contain. Quantitative analysis of foods as to starch, albumen, carbon, fat, mineral matter, etc. Computation of the amount of the different food principles necessary for a normal child and adult. Comparison of amount of tissue-building materials with energy-producing materials. Inference.

Cooking.—Scientific Cooking.—Estimation of effects of temperature, water, various forms of bacteria, and the processes of digestion upon food constituents. Necessary uses of measures of weight—avoirdupois; of bulk—dry and liquid; of money—dollars, dimes. Means of measuring time and temperature. Success of practical cooks as dependent upon the unconscious accuracy of their judgments and the mathematical exactness of their measurements. Preparation of simple lunch, involving (a) a knowledge of food principles, (b) estimation of amount of articles selected, (c) estimation of the cost, (d) careful preparation of food in regard to food values and proportions.

Physics.—Incidental observation of evaporation and ebullition in cooking experiments. 1. Evaporation takes place at all temperatures, the amount varying with the exposed surface. 2. The rapidity of evaporation depends upon the kind of liquid. 3. Temperature of the boiling point remains constant. 4. The boiling point varies with the kind of liquid.

V. Farming.—The necessity for number in all farm work is illustrated in the following report; it represents a crop of corn grown on 9½ acres of land in Massachusetts:

1. Preparatory plowing and harrowing,	$ 5 00
2. Fertilizers; *i. e.*, 462 lb. of sulphate of ammonia, 177 lb. of muriate of potash and 163 lb. of bone-black treated with 81 lb. of sulphuric acid	33 00

3. Mixing, carting and spreading fertilizers	$ 1 40
4. Seeding and planting	1 60
5. Cultivation and hoeing	5 00
6. Cutting and stacking	3 00
7. Husking	11 50
8. Storing the fodder	7 50
9. Interest on land and taxes	5 50
Total expenses	$73 50
Besides the corn there was harvested 5.75 tons of fodder, to be sold at $8 per ton	$46 00
Actual cost of 115.5 bu. of corn	27 50
Actual cost of 1 bu. of corn	.238

When applied to the vast farms of the Middle States the problems increase. Especially important is the question of transportation there. (a) Railroads, surveying, etc. Continuous use of geometry and trigonometry is necessary. (b) Commerce—illustrated by duties: From the Daily News Almanac find the amount of money paid to the Government for imported goods. How has the Cuban war affected this? What articles which we use daily belong to the list? Give a list of problems which show the value of these articles before paying the duty; value afterward and value including commission to agents for buying them. (c) Census. The growth of the population shown by comparison of the first census with succeeding ones.

VI. Industries.—In the great industries and manufacturing plants and in our shops there is no problem too small to be of significance to the manager. Mathematical precision is at the basis of success. Number is involved in every move, from building and furnishing the plant, from the measurement and purchase of raw material, price of labor included, to the finished product.

Department of Art

John Duncan Antoinette B. Hollister Clara I. Mitchell

Three art courses will be given: Mr. Duncan, head of the department, will present a course in the principles of art, with illustrations. His work will begin July 15th, and continue for three weeks.

Miss Hollister's course will be clay modeling and painting, and Miss Mitchell's, industrial art with special relation to textile fabrics.

The design of these courses is to make modeling, painting, and drawing the means for self-expression and constructive activity, correlating them with all other subjects, and using them in the same way and for the same purpose that speech, oral reading, and writing should be used.

The child is recognized as a bundle of activities, eager to manifest himself in all possible ways.

Art as an outlet of personal energy satisfies normal desires and reacts upon growth and development.

The exercises will be simple and carefully adapted to elementary teaching; much of the work will be done in the field.

Principles of Art

JOHN DUNCAN

I. Art Teaching in Relation to Nature Study.

The course will begin with the simple and conventional methods which young children actually develop for themselves, and will thence progress through practical demonstrations in schoolroom and museum to open-air work in school garden, botanic and zoölogical garden, park and country.

As far as possible the study of nature will be completed by the correlated treatment of human occupations, thus leading to—

II. Figure Drawing and Composition.

Here will be indicated some methods of study and teaching taking the place of the usual work of a life class.

In both the above sections progressive exercises will be set in drawing, not only from direct observation, but from memory, and also from imagination.

III. Art in Home, School, and City Life.

Actual modes of decoration of living rooms, schoolrooms, etc. Possibilities of improvement in simple ways.

External aspect of buildings; as determined from within and from without; and with varying influence of material conditions and of ideals.

The changing aspect of cities, from age to

age. Examples from Athens, Rome, Florence, Edinburgh, Paris, Chicago. Disadvantages and possibilities of modern cities.

IV. Art in the Teaching of Literature and History.

Examples:

(1) From contemporary monuments, e. g., Roman, Mediæval.

(2) From imagination, e. g., *Orpheus, Jason, Ossian, Arthur, Joan of Arc.*

V. History of Art.

The Historic Styles: Egyptian and Assyrian; Greek and Roman; Celtic, Byzantine, and Romanesque; Gothic; Renaissance. These styles being viewed not as fixed standards of perfection, but as phases of (largely continuous) evolution or degeneration. The Paris Exhibition of 1900, with its medley in survivals and renaissance. The Assyrian Tree of Life, and its transformation through the ages.

VI. The Principles of Design.

Illustrated by the selection or invention of simple motives, and by their development and application to different technical processes, especially those more readily available in school.

The lectures will be illustrated by the lantern, by photographs and reproductions, and by blackboard drawings. Each will be accompanied by appropriate practical work, beginning with the rapid copying of the lecturer's blackboard and other illustrations, but also as far as possible rising to the preparation by the students of original designs in the different styles in outline or in color.

VII. If time and conditions allow, a beginning will be made in *Associated Art Work*, i. e. the best students will be selected to assist in planning and carrying out a simple scheme of decoration.

Painting and Modeling

ANTOINETTE HOLLISTER

Botany.—(1) Painting and modeling of the flora of the region selected for investigation. (2) Studies illustrating peculiarities or significant changes of landscape.

Geography.—(1) Simple relief maps of surfaces observed. (2) Studies of mountain and wave forms. (3) Studies of racial types.

Zoölogy.—Animals and insects—there structure, homes, and habits.

History.—(1) Pottery. (2) Architectural forms. (3) Primitive dwellings.

Literature.—(1) Illustrations of myths and other stories.

Mathematics.—(1) Typical forms. Preparation for geometry.

A large collection of photographs, representing the best art, will be used in teaching.

Materials.—Paints—colored crayons; pencils; charcoal; clay; portable modeling and painting tables; modeling aprons.

Any of the above materials may be purchased at the Supply Store of the Chicago Institute.

Industrial Art, as Illustrated in Textile Fabrics

Clara I. Mitchell

I. Design. Comparison of samples of fabrics as to interest of design. (Note: Great care should be used in the selection of designs. Only good ones, and, if possible, the best, should be given to children for study.) Lessons and practice in designing such fabrics as children find immediately interesting through their work, e. g.: Covers for seats and cushions, curtains, scarfs, belts, table-covers; rugs and costumes which may be used in development of history lesson. Baskets woven of fiber willows and Indian wood splits. Design to be planned, drawn, and painted to fill spaces required, e. g., border circles, squares, oblongs, diamonds, ovals, triangles, and hexagons. The principles of repetition, alternation, and radiation explained and illustrated as elements in design. Study of classic patterns. Conventionalization of perfect form. Simplicity of design; evenness of distribution; variation of lines; contrast of forms. Weaving or embroidery of articles which are needed for use of children at home or at school; appropriate gifts; such simple and primitive textiles as will present to children the fundamental problems of the industry, with the opportunity for invention, construction, and artistic expression;

as, for example, small rugs, curtains, holders, bags, fragments of suiting, of coarse and simple weaves. Weaver's method of design illustrated.

II. Color. Textile study a development in sense of color harmony. Color in design as indicated above. Use of water-color wash. Discussion by children of color combinations. Study of good and harmonious combinations. Educative materials for study of color: Bird's plumage, insects, shells, flowers, leaves, minerals, and soils. Necessity of training in sense of color harmony. Conscious knowledge of relations of colors, tones, hues, and shades. Charts and guides for use of teachers only.

III. Preparatory work for younger children: Basket-making, primitive weaving, drawing threads of coarse canvas or burlaps, and weaving in decorative colors and designs. Simple netting.

REFERENCES.

Jacquard Weaving and Designing, T. F. Bell. *Textile Designing*, Jacquard. *Textile Fabrics*, Fischbach. *Textile Fabrics at the South Kensington Museum*, Rev. Dan Rock. *Tapestry, The Industrial Arts*, published by Chapman Hall. *Ornamental Design for Woven Fabrics*, Stephenson and Suddart. *Hand Book of Ornament*, Frank Sales Meyer. *Claims of Decorative Art*, Walter Crane. *Application of Ornament*, Lewis F. Day. *Grammar of Ornament*, Owen Jones. *Illustrated Plates on the History of Art*, Prang. Chevreul on Color. *The Theory of Color*, Dr. William Von Bezol. *A Class Book of Color*, Mark N. Maycock. *Color in the Kindergarten*, Prang.

NOTE.—Under the Department of Applied Pedagogy will be found a syllabus of the Round Table Talks given by Miss Mitchell upon Textile Fabrics, in which questions of weaving, dyeing, and sewing will be considered in detail.

Speech, Oral Reading, and Dramatic Art

Martha Fleming

Reading is a means of thinking; it focuses experience, realizes ideas, and forms habits. It is incidental to all studies. Little children are full of dramatic expression. It is instinctive in the human soul, and is the common property of the race. Manifestations of the dramatic instinct clearly observed in primitive peoples and in little children are dancing, imitation, impersonations, and dramatic plays; through these the child may consciously link himself with the past of the race, with the primitive peoples still living, and at the same time learn to know and express himself. Dramatic instinct makes the great events of history and the phenomena of nature real to the child.

Emotions are potent factors in determining action; what we like or dislike, what rouses our anger, fear, or enthusiasm, determines our action. Therefore a child should read only good literature, literature which appeals to the higher emotions, such as love, courage, and patriotism. The importance of correlating reading with the other studies, of using it at the time and point when the connection is closest, is thus apparent. Expression of emotion either deepens and intensifies thought or acts as the confessional, exorcising the demons of anger and hate. It is beneficent and cleansing, and makes for harmony and sanity.

Since imitation is a potent factor in education, and action is one of the first things imitated, dramatic training is of great importance to the teacher. Gesture is truth to the child; he does not *hear* what you say—he *sees* what you do. If the children are to read well, the teacher must read well herself. If the teacher undervalues emotion, and does not see its direct relation to thought, the children will soon learn to think that emotion must be con-

cealed, and will show the evil effects of repression. If the teacher's voice rasps, and cuts into the sensitive child ear, what is the effect upon the child's voice? Upon his moral nature? The teacher who understands the significance of the forms of expression in the body and voice of the child has at command one of the best means of studying him. Other things being equal, the teacher whose training has given her dramatic power is a better teacher of any subject than one limited in this power.

Teachers coming to the Summer School to study for skill will naturally divide themselves into two classes: those who are beginners and those who have acquired a certain degree of power through experience. The aim of the course will be to help teachers to acquire the ability to think rapidly and intensely by means of the printed page, and to express thought and emotion in movements of the body, in voice and speech. The training in these classes will be adapted to the needs of the teachers in the schools. Criticism, while recognizing individual strength and limitations, will aim to correct faults by stimulating to more vivid imaging and more adequate expression. There will be study and interpretation of some of the masterpieces of prose and poetry. Scenes from some of the classic and modern dramas will be analyzed and presented. The power to think and express thought clearly before an audience will be brought out by means of short speeches and debates; and since every teacher needs to know how to conduct a public meeting, some drill on parliamentary procedures will be given.

The literature used in these classes will be that which is most closely related to the subject-matter taught in History and Nature-Study. As a preparation for this work, the teacher would do well to select a scene from a drama or poem, study it, live with it, and come to the class ready to express what it means to her. It is suggested that some preparation be made upon the following selections: "How the Leaves Came Down," Susan Coolidge; "My Shadow," Robert Louis Stevenson; "The Wind and the Moon," George MacDonald; "The Pied Piper" and "Hervonte Riel," Robert Browning; "The Tar Baby," Joel Chandler Harris; "Paul Revere's Ride," Longfellow; "Julius Cæsar," Act I, Scenes I and II; "Who Stole the Bird's Nest?" "Owl against Robin," Sidney Lanier; "The Gamin," Victor Hugo; "Sheridan's Ride," Buchanan Read; "John Burns of Gettysburg," Bret Harte; "Oh, Captain, My Captain," Walt Whitman.

I. Reading.—Definition—Motive.—A means of thinking, of focusing experience, of realizing ideas, of forming habits. Compared as a mode of thinking with observation. Child's earliest interest in reading; whence the desire to learn new words? Suggestions as to methods of teaching.

II. Oral Reading.—A mode of expression. Compare reading and talking as modes of expression. Function and place in education. Relation to other modes of expression. Agents of expression. Motives governing the desire to read aloud. Ideal conditions. Value of story-telling by children; of discussions on subjects of interest in the social life of the school; of drill upon literature committed to memory. Shall a child who is reading orally be allowed to struggle with the pronunciation of a word? How shall he be kept unconscious of his difficulty? Function of sight-reading. Character of material used for sight-reading.

III. Dramatic Expression.—Use of the dramatic instinct in character-building and vitalization in educational methods. Relation to Nature-Study and History. Illumination of words by tones of voice and movements of body. Relation to other modes of expression. Dramatic reading a means of training the emotions. Emotion the basis of all artistic expression. Special function of dramatic expression in the upper grades. Expression the natural result of all intense thinking. Effects of repression.

IV. Selection of Literature.—Dramatic literature should be chosen for drill. Analysis and interpretation of selections adapted to chiidren in different grades. Lists of selections to be used with History, Geography, and Science in the different grades. Principles upon which a story or selection may be cut or adapted for oral reading. How to incite children to study a selection. Value of silent, independent study of text. Over-analysis. Criticism. Self-consciousness. Affectations. Genuine expression. Study of individual children. Children as judges of literature. Relation of story to the drama. Dramatic representation of stories. Suggestions as to manner of telling a story to children.

V. Gesture.—Gesture a universal language, modified by nationality, temperament, and habits of life. Function of gymnastics as a preparation for expression. Gymnastics which have the forms of expression. Movements which express fatigue or physical weakness; movements which are the spontaneous expression of thought and emotion. Pantomime: The expression of thought and feeling by bodily movements. Bearings, attitudes, and inflections. Poise. Relation to health, to expression. Sitting, standing, walking. Good positions in seat work and recitations. Exercises, plays, and games for making good carriage of body habitual. Rhythmic movements to music. Energy. Relation to health and expression. Control and direction of energy.

VI. Voice.—Power and significance of the voice in spoken language. Voice quality and intonations the expression of character, of emotional life, and physical conditions. Voice in speech and song. Training the ear to distinguish voice qualities. Management of breath. Force. Pitch. Quality. Inflection, accent, emphasis, pause, rhythm. Practice for making the voice pure, flexible, responsive, and effective. Tone projection. Care and management of children's voices.

VII. Speech.—Is there a standard English? How determined? Provincialisms; dialects. How to train the ear to recognize speech qualities, to discriminate the elements, such as vowels, glides, and consonants. Bell's vowel and consonant tables. Training the speech organs. Formation of vowels; articulation of consonants. How shall the child be helped to speak good English? Value of phonics. Value of drill upon words. Habits of speech. The most economical way of correcting bad habits. Causes of speech defects: (a) Defective hearing. (b) Abnormal conditions of mouth and throat, such as enlarged tonsils, adenoid growths, narrow arch, mouth breathing, tongue-tie, and defective arrangement of the teeth. (c) Imitation of speech defects. (d) General nervous conditions. Diagnosis and treatment of speech defects. Value of such knowledge to the teacher.

VIII. Public Meetings.—Practice in writing and preparing material for delivery in public. Thinking before an audience. Short speeches. Debates. Orations. Parliamentary law and usage. The teacher in public assemblies. Morning exercises. Special day exercises. Educative value. Basis for arrangement of programs. Discussions once each week of the teaching of oral reading, as observed in the model school.

Department of Physical Training

Carl J. Kroh Caroline Crawford

The courses in Physical Training are divided into terms of three and six weeks respectively. The two short terms will deal with the essentials of the subject, in periods of actual work and in discussions. The fundamental procedures in gymnastics will be illustrated, together with the practice, and the course will include the study and development of games and plays suitable for school purposes.

The full course of six weeks is designed for a more comprehensive study of the principles of gymnastic development, and will include the adaptation and direction of schoolroom, playground, and elementary gymnasium work. Educative and recreative gymnastics, theories, and methods of training will be dwelt upon in a general way in order to establish the pedagogical order and value of physical exercises.

Equipment, organization, and instruction plans will be proposed and discussed in detail. Instruction courses will be outlined covering the eight divisions of the subject, adapted to the different school grades and high schools, and based on exercises appropriate to the various ages of school children.

Special Courses

Corrective Gymnastics.—The purpose of this course will be to acquaint teachers with the remedial forms of exercise and to enable those who have had some experience in teaching gymnastics to give remedial aid to children who show the effects of bad postures and other defects incident to school life. Special study in the analysis of movement will be required. The course will include reviews in anatomy, physiology, applied anatomy, and anthropometry. Special conferences will be called for the discussion of school hygiene—seating, ventilation, position for motor work, length of school day; home hygiene—diet, clothing, bathing, sleep; and public hygiene—soil, drainage, water, and air.

Dancing and Dancing Calisthenics.—Teachers in quest of personal improvement and recreation, who wish to avail themselves of the opportunities offered in either the elementary or advanced courses, may form special classes for the study of dancing and dancing calisthenics. Participants will conform to the general rule, and provide themselves with the regulation gymnastic costume.

Fencing Courses may be arranged for separately. Individual or class instruction will be given.

For lectures on the relation of physical training to all other work, the relation of mind and body, the play element in education, diagnosis of children, nervous signs, fatigue, and the relation of physical training to the applied sciences, see syllabi of other departments.

Stress will be placed upon the practical work in all departments. It is advised, therefore, that a little moderate exercise be taken daily.

The theoretical and practical studies will be conducted during the last two periods of each morning. The second morning and first afternoon periods will also be known as special practice periods, and will be devoted to individual practice.

Persons enrolling for instruction in the short term courses should reserve at least two hours for their work; i. e., one period for instruction and one for special practice. Those enrolling for the full term should reserve two instruction periods and one practice period.

Participants in the different courses are required to wear the regulation gymnasium suit and slippers.

The courses in Corrective Gymnastics may also be taken as part courses by students of the general courses.

BOOKS OF REFERENCE:

Human Anatomy. Morris.
American Text-book of Physiology.
Physiology of Exercise. Dr. F. W. Schmitt.
Physiology of Exercise. La Grange.
Anthopometry and Physical Examination. Seaver.
Papers on Anthropometry. American Statistical Association.

Kindergarten Training Department

Bertha M. Payne Anne Elizabeth Allen

The courses offered in the kindergarten department of the Summer School are designed to help both the kindergartner and the primary teacher, in the belief that both need in most fundamentals the same study. When both classes of workers have a better grasp of the dominating instincts, impulses, and interests of childhood during the kindergarten age and the first school years the present break between the first grade and the kindergarten will disappear. The kindergartner needs an actual working knowledge of children beyond the play period; without it she cannot rightly measure the bearing of her training upon the child's later development. Similarly, the primary teacher needs an understanding of children in the play period of development, in order correctly to understand the youngest in her group. When she knows the conditions under which her class fresh from the kindergarten has lived, she can carry the children on without waste of effort.

The youngest children in the kindergarten are satisfied with simple forms of activity not aimed toward permanent results. When a little older they begin to plan, but are easily turned aside by accidents and suggestions; when still more developed, they plan more carefully and carry out the plans more persistently. When a child can plan a piece of work and keep on developing it from day to day he is usually ready for the more conscious work of the first grade. The play impulses, however, do not then stop short, but recur continually in different forms, which should be understood by the teacher and used in the best way. This is where a study of Froebel and of the kindergarten of early childhood proves itself helpful.

The representative plays of the kindergarten may develop into fuller dramatizations. The simple games may be followed by those demanding more skill. The building plays of the kindergarten may go on or be followed by construction work. Sloyd follows the easier occupations of the kindergarten. Singing, drawing, painting, and modeling increase steadily in definiteness and feeling for life.

For both kindergartner and teacher, then, we shall make a study of the psychology and pedagogy of play and work from earliest childhood into the first school years, also of the demands that life makes upon the child; and we shall consider the best means of keeping him in the right attitude toward others.

In these three endeavors we shall find great assistance from the interpretations that Froebel has given to child manifestations. What we find in Froebel may be supplemented, illustrated, or criticised by the later work in genetic psychology and child-study. We will use from these sources all that bears most directly upon the questions of play, toys, games, language, drawings, feeling for nature, and religious feeling.

Observation in the kindergarten and in the first grade will be found very helpful to those taking this course.

Syllabus of Play and Work of the Kindergarten

Bertha Payne

I. Fundamental Idea of the Kindergarten.—1. Needs of child met. 2. Methods of finding needs. (a) Observation. (b) Reminiscence. (c) Comparison with the judgments of great educators. 3. Dangers and difficulties attending each of these methods. (a) Complexity of child-nature; difficulty of discovering motive back of action. (b) Incompleteness of memories of early childhood. (c) Tendency to see in the child preconceived notions realized. 4. Method must be based on needs that are fundamental and universal in nature of child in his social and individual life. 5. Why we cannot simply adopt Froebel's methods and interpretations. Each one must be a discoverer. Froebel's genius affords greatest help in interpreting facts observed. 6. History of kindergarten as it evolved through Froebel's experience.

References: Barnard's *Child Culture.* See Froebel's Autobiographical letter. Heineman, *Froebel Letters.* Read letters to Barop and others.

II. Discussion.—1. Aim to find largest needs of children during period included between the ages of 3 and 6 years, approximately. Method: (a) Reminiscence. (b) Observation. 2. Selection of tentative list. 3. Observation in the kindergarten, with definite points in view.

References: Froebel—*Education of Man;* Section II—Man in Earliest Childhood. J. M. Baldwin—*Child and the Race,* vol. 2, chap. on Play. G. Stanley Hall—*Story of a Sand-Pile.* E. T. Kellogg & Co.

III. Impulses Fundamental in Different Forms of Activity.—1. In what impulses are the following activities rooted? (a) Building, (b) Singing, (c) Games, (d) "Make-believe," (e) Drawing. 2. Special observations of children in the kindergarten and elsewhere. 3. Problems: (a) To distinguish fundamental impulses and interests from accidental and capricious. (b) To foresee habits and interests evolved from normal instincts and impulses. (c) To guide impulses into such channels that they will help growth and not merely indulge fancies. (d) To provide materials and methods that will foster a steady growth in interest, knowledge, and power of expression. (e) To keep these three phases of activity in right relation to each other.

IV. Study of Impulses in Earliest Childhood and Infancy.—1. Complex activity of children of kindergarten age. Problems are simplified and clues given by taking them earlier. 2. Give instances of earliest forms in which child shows a play manifestation. 3. Describe probable mental process on mental as well as physical side in each instance. 4. Do they bring any increase of power? In what ways? 5. Do they require the co-operation of another person to complete the activity? 6. Can these manifestations be classified? If so, how? 7. What part does accident play in any of them? 8. Are they permanent or transitory? Have they any permanent elements? 9. Observation with these points in mind: Froebel's ball plays and first three baby plays in the "Mutter und Kose Lieder." "Finger Plays," Emilie Paulsson, social and ethical values indicated.

V. Interests in Earliest Forms.—1. Attention to things—movement, light, sound, colors. When and how manifested? Length of periods of attention. Is effort to attend shown? 2. Efforts to grasp, carry to mouth or throw object. To repeat noise or movement made by others. What relation have these impressions and subsequent efforts to the growth of space, time, sound, and quality perceptions? How does child obtain first notions that we attach to words, here, gone, there, near, far, high, low, up, down, big, little, hard, soft, fast, slow, etc.? 3. Note especially part that child's own bodily activity plays in arriving at these apprehensions. 4. Imitations, participations of others, playthings. Froebel's idea of the function of his second gift in this relation. Contrasts give values.

References: Froebel—*Pedagogics of the Kindergarten;* chap. on Sphere and Cube. Perez—*First Three Years of Childhood.* Preyer—*Soul of the Child;* vol. on Senses and Will. Baldwin—*Development of Child and Race;* vol. I. Record of method of experimenting with his child.

VI. Rhythm.—I. Why a fundamental element? 2. Rhythm (a) in Games, (b) in Music, (c) in Construction, (b) in Nature. 3. Observation of rhythms in the kindergarten. Practice of rhythms. 4. Collect list of rhythmic games outside of the kindergarten. 5. Process of development of the rhythmic sense. 6. Rhythm in the spontaneous occupations of children. Give instances. Do you find it in children's drawings? 7. Froebel's occupations of drawing, sewing, and weaving seen in this aspect. 8. Character of the material as determining form of early plays.

VII. Imitations and "Make-Believe."—1. In play without material. (a) Does imitation assist invention? (b) Difference between imitation and invention in play. (c) Function of imagination. (d) At what age does representative play appear? (e) Ethical value. (f) To what does it lead? Dramatizations of older children. (g) Use of the term "symbolic play" discussed. (h) What is symbolized? 2. Study of some of the songs in Froebel's Mutter und Kose Lieder. 3. Imitation and invention in play with materials. (a) Describe plays that you have observed. (b) What materials used? (c) Substitution of a part for the whole. (d) Function of imagination in completing the picture and the process. (e) Educational value. (f) Income and outgo on mental side. (g) How may the teacher increase pedagogical value by taking part? (h) To what forms of activity may these plays lead? (i) Froebel's first and second gifts in this connection. Other materials. Continued observation of illustrative plays with material among the youngest children in the kindergarten.

VIII. Interest in Movement Enlarged.—1. Attraction in phenomena of change; transformations. 2. Interest in building and pulling to pieces, at first for the sake of seeing change and feeling power. 3. Accidents in relation to invented constructions that have meaning. 4. Trace steps from first activity for activity's sake to conscious activity. 5. How is idea defined after attempt to express? 6. Advantages of building gifts as materials for constructions. (a) Can be handled before child has sufficient strength and skill for real construction. (b) As power grows, complexity of parts increases. (c) Impressions afforded of elements fundamental in all imaging of form number, size, position, without drill. 7. Free and directed play with materials. (a) Play observed; subjects chosen and further conditions for play planned by class. (b) Function of imitation, suggestion, and direction in these building plays; discussion. (c) Co-operative building; social value.

IX. Dominant Interests of the Older Children of the Kindergarten.—1. Found in (a) family life, (b) trade and industrial life, (c) nature. 2. How shall these phases of environment be correlated? 3. Continuity in consideration of subjects. 4. The effect of season upon environment; consequently upon child interest. 5 Problem of supplying natural conditions to city children. Gardens, pets, aquaria, etc.

X. Effect of Immediate Surroundings in Determining Character of Child's Images.—1. Artistic influences in home and school. Moral influences. 2. Relation of experience to expression. 3. Reaction of expression upon observation. 4. Difference in the character of images of a farm in country and city children. Other illustrations. 5. Selection of desirable experiences in country life for little children from (a) industrial, (b) æsthetic standpoints. 6. Importance of the influences that are not even consciously perceived by child. Illustrate by farm life. 7. Excursions for children under seven. What to expect from them. How to direct observation without teaching. Limitation of child's power of apprehending new conditions for given length of time. Reasons on the side of brain activity. 8. Review of the features of trade life that come closest to a child's experience. (a) In view of the simplicity of process, tools, etc. (b) In view of the meaning it has in child's own life. (c) In view of its relation to home life. 9. Pictures. (a) What subjects attract, and why? (b) Value in filling in mental pictures of things vaguely experienced. (c) Is technique equally important with content of pictures used for this purpose? What is the ideal picture for this purpose? (d) Method of preserving and using pictures of temporary value. (e) List of noted pictures that are good both as works of art and as embodying subjects of interest. (f) Stimulus to expression. (g) Formation of ideal standards. 10. Stories. (a) Correlation with other work and play. (b) Influence of story, æsthetically, morally. (c) What instinct of childhood deepens effect of story? (d) Relation of story to dramatic expression. (e) Do all stories lend themselves to such expression? (f) Relation of stories to other forms of expression, re-telling, drawing.

painting, modeling. (g) Sources from which to draw stories for children under eight years of age. 11. Music; songs. (a) Music as a motor stimulus. Relation to dancing, marching, etc. (b) Dependence of child's ability to sing upon his hearing of music; growth of musical ideas. (Discussion of children's singing is taken up under another topic.)

XI. Forms of Expression.—Consideration in detail of the main forms of expression with the older kindergarten children. Games, singing, drawing, painting, modeling.

XII. Making, Constructive Work and Play.—1. Kindergarten occupations as planned by Froebel considered with modifications. 2. Work with other materials. Sewing, weaving, cardboard modeling. 3. Housekeeping.

References: Froebel—*Education of Man; Mutter und Kose Lieder; Pedagogics of the Kindergarten.* S. E. Blow—*Symbolic Play.* All published by D. Appleton & Co. Barnard—*Child Culture Papers.* J. Paul Richter—*Levana.* Bohn's Library Series. J. M. Baldwin—*The Child and the Race;* 2 vols. Jas. Sully—*Studies in Childhood.* Perez—*First Three Years of Childhood.* Preyer—*The Soul of the Child.* Also *Infant Mind.*

Manual Training Department

Ira M. Carley Cora Champlin

The Manual Training Department offers two courses, one in woodwork and the other in illustrated construction.

In the course in woodwork the object will be to present conditions for obtaining the greatest amount of skill possible in a given time, and to consider the aims and principles of Manual Training.

For the acquisition of skill the course of models illustrated herewith has been planned, with the purpose of presenting a series of exercises involving the use of all the common woodworking tools. It is so arranged as to present new problems of construction with each model. The attempt has also been made to make a progression of difficulties which shall keep pace with the increasing power of the worker.

This series of models is not intended to be a Manual Training course for children, but definite suggestions for work adapted to both the primary and grammar grades will be given. Particular emphasis will be placed upon the relation Manual Training bears to other school work.

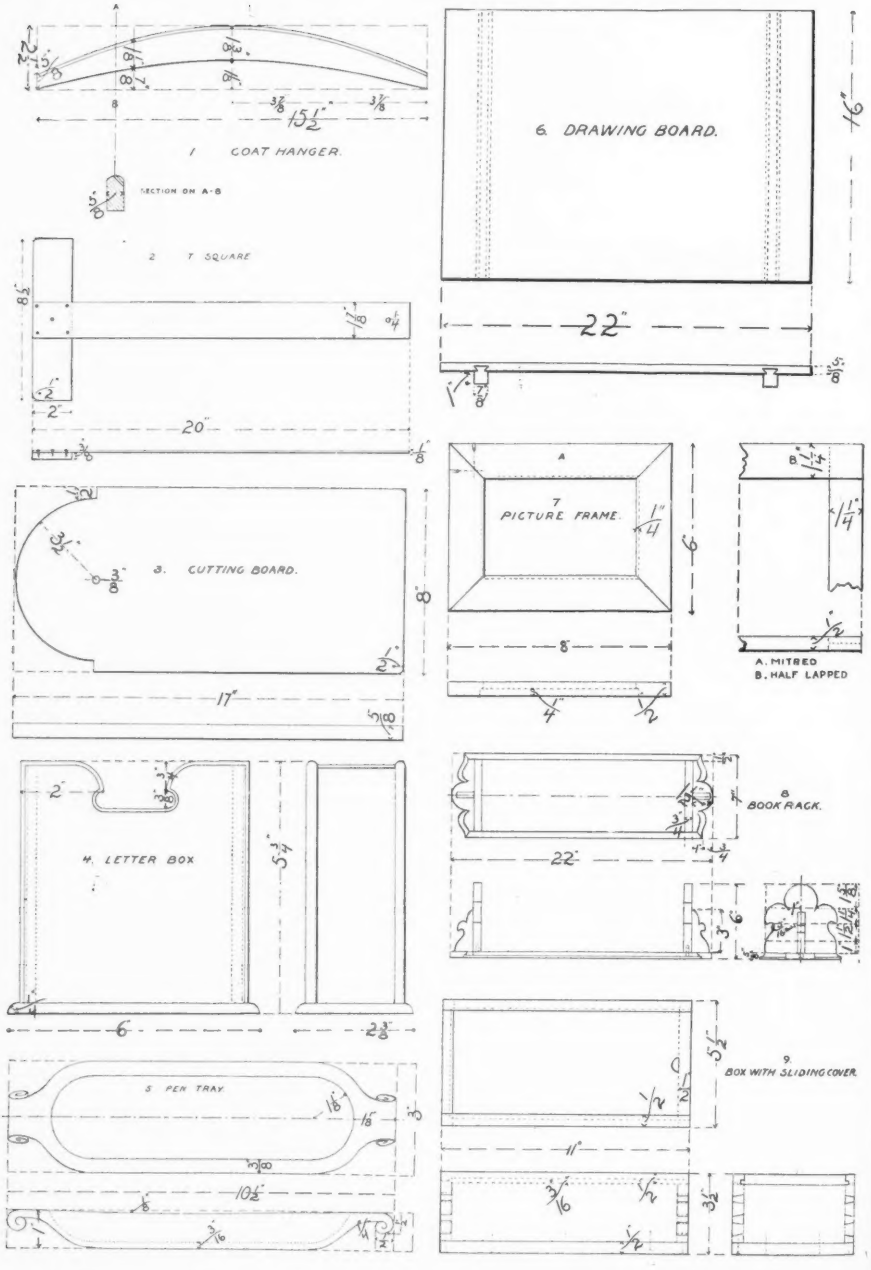
In considering the principles underlying the work, the endeavor will be made to present the history of the development of Manual Training and of its value in general education.

The history of the Manual Training movement is one of growth from the purely industrial and technical ideal to the educational. The power of concentrating all the energy upon the attainment of the desired end; the training in right habits, through orderly, careful, and systematic work; the power of definite, accurate reasoning; the cultivation of the artistic sense; and a degree of motor training which shall make of the hand an adequate instrument of expression for all ideas susceptible of manual expression—these are a few of the ideals which Manual Training endeavors to realize.

The objects of the course in constructive work are to consider the aims and value of handwork which can be carried on in the ordinary schoolroom; to determine the kinds of handwork best adapted to the various grades, taking into consideration the limitations of the schoolroom; to show how constructive work may illustrate and enhance the other subjects of study. This work is particularly valuable in connection with those studies which go to show the development of the people through their industries. In this endeavor the more simple industrial processes which touch intimately the child's own life should be taken as a point of departure.

The processes of primary importance are those relating to the problems of food, clothing, and shelter. The attempt will be made to show how constructive work may be used to illustrate the way in which these problems have been solved and how the solution has been influenced by the climate, geographical nature, and resources of the particular region.

Another field in which constructive illustration may be made especially valuable is in the study of the public works of cities. The plan which will be followed in this work will be the laying out of an ideal city with reference to the location of parks, the disposition of the railroad systems, the problems of street transportation, the kind of pavements adapted to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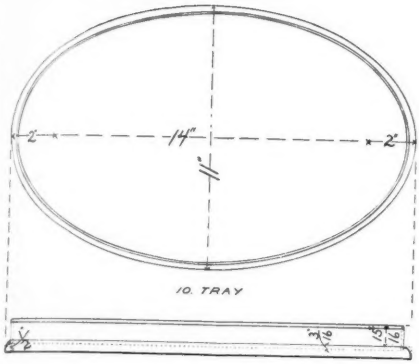
SECTION ON A-B
2 T SQUARE
6. DRAWING BOARD.
22"
16"
3. CUTTING BOARD.
17"
7 PICTURE FRAME.
A
B
A. MITRED
B. HALF LAPPED
4. LETTER BOX
8 BOOK RACK.
22"
5 PEN TRAY
9 BOX WITH SLIDING COVER.
11"



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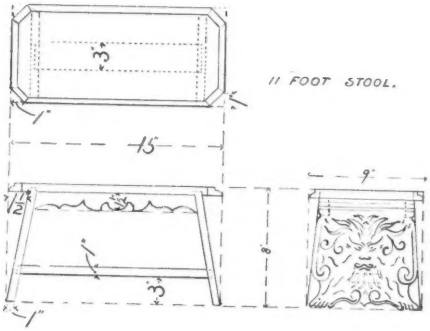
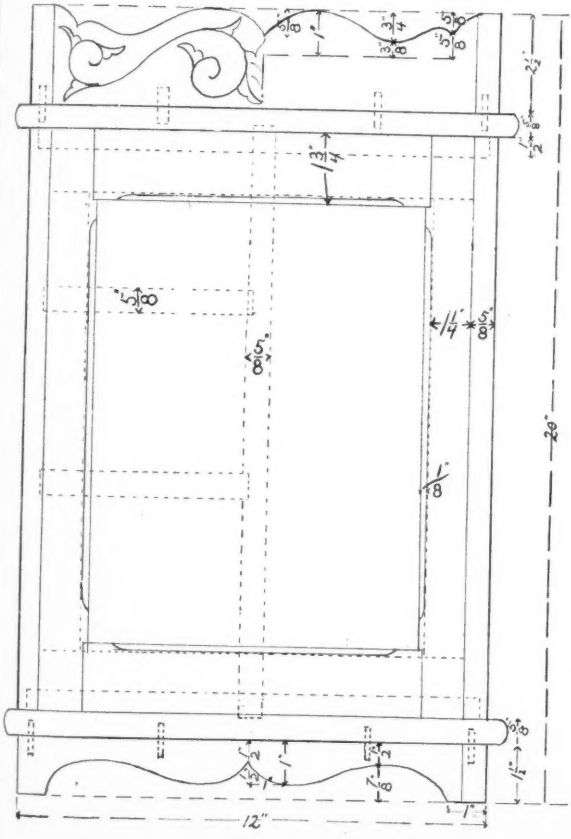


11 FOOT STOOL.

12. CABINET.



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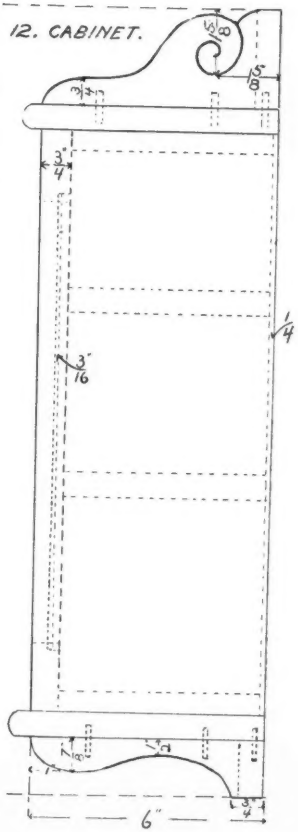


various sorts of traffic, the water supply and drainage, and the methods of building construction as affected by the character of the soil, and the value of land space.

Under the course in constructive handwork are included book binding and making in paper and cardboard.

In the making to be done by the Summer School class, work which is similar in character is grouped together, not with the idea of laying down a course, but for convenience and economy of time in handling materials.

The Syllabus of the Course in Woodwork

I. The History of the Manual Training Movement.

1. The development from the technical and industrial to the educational ideas.

II. The aims of Manual Training as a Factor in General Education.

1. Development of motor ability. (a) The power of accurate co-ordination in terms of mental development. (b) The importance of the hand as an organ of the mind.

2. Effect upon the character of the child. (a) The growth of will power through voluntary activity. (b) Self-reliance, springing from consciousness of ability to do. (c) Concentration, attention, honesty of effort demanded.

3. The necessity for clearness and accuracy when the thought is to be expressed by doing.

4. Reasoning and judgment necessary in selecting and adapting means to end.

5. Opportunity given by Manual Training for the child to direct his efforts towards concrete ends which intimately concern his own life.

6. Training of the artistic sense. (a) Appreciation of form, symmetry, proportion. (b) Adaptation of design to function. (c) The principles of Manual Training.

The Course in Construction Work.

The fundamental basis of the work is found in the deep-seated instinct for creative effort inherent in the nature of every child. Recognizing the force of this instinct, Manual Training seeks to direct the energies of the child along right lines by affording him opportunity to put his creative effort into the doing of things which he feels to be of value and truly worth while.

The problem which will be given special prominence in this course of study is how to make the work a more organic part, both of the child's school and home life. To accomplish this means to give opportunity for constructive expression (wherever it is the most adequate form of expression), in the form most suited to the age and experience of the child; to give scope to his inventive and constructive faculties in the making of apparatus for use in other lines of work; to give him the opportunity of helping to beautify his school surroundings; to respect his initiative in regard to what he shall make for his home.

A second problem of importance will be that of arranging the exercises in woodwork so that an orderly progression of resistances shall be offered, demanding sustained directed effort, and leading to a conscious increase of power on the part of the worker.

1. Effort to find a working basis in Manual Training. (a) Course of technical exercises. (b) Course of useful models. (c) Illustration of these courses by various systems of Manual Training.

2. The real needs of the child, either in school or home, and the inter-relation of handwork and other school occupations as a basis. (a) The problem of so arranging work, upon this basis, that increasing motor ability shall result. (b) Extent to which the child's initiative shall be followed in selecting things to be made.

3. The proper time in the child's life for most effective hand training. (a) Period of greatest growth of motor centers.

4. The kinds of movements which make for best motor training.

5. Degree of skill and accuracy which should be demanded. (a) Basis for criticism of work.

I. The Use of Numbers and Geometry in Manual Training.

1. Demand for the use of the fundamental operations in number at every step in construction.

2. The ability to estimate magnitudes through constant measuring.

3. The demand for simple geometrical constructions.

II. The Use of Drawing in Manual Training.

1. Freehand sketches.

2. The theory and practice of orthographic projection, and its application to working drawings.

3. Isometric projection. (a) Principles of making isometric projections. (b) Where they are most advantageously used.

III. Study of Construction and Designing in Woodwork.

1. The limitations resulting from structure.

2. The methods of construction best adapted to various purposes.

3. Beauty due largely to correct proportion and construction.

4. Simplicity of design demanded by the material.

5. Kinds of wood best suited to various purposes.

IV. Ornament in Manual Training.

1. Use of ornament. (a) To emphasize the function of the object. (b) Over-decoration and meaningless decoration to be avoided.

2. Practice in decorative designing, in wood carving, and pyrography.

Syllabus of Course in Constructive Work

I. The Aim and Value of the Work.

1. Its appeal to the creative instinct of the children.

2. Value in relation to other studies. (a) Strength of images gained through contact and struggle with material. (b) The advantages, and limitations as a mode of expression. (c) The kinds of images best expressed by its means. (d) Age of children for whom handwork is most valuable as a mode of expression. (e) How the child uses number and simple geometry in construction as a means of reaching a desired end.

3. Training in attention, concentration, and in correct habits of work.

II. The Constructive Work done by the class will be along the following lines:

1. Cardboard and paper construction. This will include the making of various articles suitable for use in the schoolroom, such as boxes for different purposes, covers for written work, portfolios, books, bookbinding and repairing.

2. Constructive work illustrating the development of the simpler forms of industries. (a) The development of peoples as shown by their advance in the industries. (b) The industries which directly concern the production and preparation of foods.

1. Hunting implements.
2. Agricultural implements.
3. Implements for preparing grains for use.
4. Development of the art of pottery. The potter's wheel.

III. Industries Connected with the Making of Clothing.

Woven fabrics—the utilization of plant fibers and wool.

The inventions of the distaff, spinning wheel, loom.

IV. Habitations.

Starting point, the construction and arrangement of the children's own houses.

1. *Primitive houses.*

Their character determined by the climate and the resources of the region and by the occupations and character of the builders.

The cummunity houses of the Mandan, Iroquois and Pueblo Indians—Wigwams. Lake-dwellers' houses. Eskimo huts. The log houses of the early American settlers.

2. *Architecture.*

Characteristics of different types. Modes of travel and transportation by land and water.

V. Constructive Study of the Children's Surroundings.

The laying out of an ideal city; location of residence districts, manufactories, business centers, parks, boulevards; study of different forms of pavements, the adaptation of the different kinds to the amount and weight of traffic over them—their cleanliness, cost, durability; disposition of railway tracks and stations; bridges—their construction; water supply drainage, fire protection.

Department of English Composition

Nott William Flint

The object of the course is twofold: To give a practical knowledge of English Composition, and to discover means for increasing the interest of grade teachers and pupils in this means of expression. To the first end the laws of English Composition discussed in the classroom will be applied and illustrated in the writing of weekly themes. These themes will be criticised by the instructor—the typical ones before the class—and then rewritten or revised by the students. Material gathered in other classes will be used in the construction of these themes, thus affording each student an opportunity to get his classroom work into a concise literary form.

The second object of the course—the discovery of fresh interests for teacher and pupil in composition—will be aimed at mainly in class discussions. That composition is admirably adapted for the use of teachers in enabling the child to express himself, and for pupils as a pleasant and absorbing mode of self-expression, the instructor will endeavor to show. As far as possible this latter object will be brought about together with the first. The sixth week of the course, however, will be given up entirely to the consideration of the uses of English Composition in the grade schools.

I. General. Is rhetoric an art or a science? Difference between Rhetoric and Grammar? Why learn to write? If composition is self-expression, why bind it with laws?

II. The whole composition. Construction work. Choice of subjects. (a) Range: abstract or concrete. (b) Titles. Finding material. (a) Two sources: personal experience and the experience of others. (b) Selection of material. Organization. (a) Outlines: use and necessity. (1) Introduction, (2) Body, (3) Conclusion. Laws. (a) Unity. (b) Coherence. (c) Mass.

III. The Paragraph. (a) Definition and general theory. (b) Historical account. (c) Modern treatment in English, French, and German. (d) Theory of length. Kinds of paragraphs. Laws: (a) Unity. (b) Coherence. (c) Emphasis.

IV. The Sentence. 1. (a) Definition. (b) Length of sentence; effect and variety. 2. Content of sentence. (A) Unity of thought: (a) too little; (b) too much; (c) the comma blunder. (B) Unity of form; subordination of clause ideas. 3. Coherence. (a) Logical order of phrases and clauses. (b) Nearness in thought should correspond with nearness in form. (c) Parallel constructions. (d) Reference words. 4. Mass: (a) Proportion. (b) Emphasis: Periodic structure.

V. The Word. The Canon of Good Use. 1. Usage should be: (a) Reputable, (b) National, and (c) Present. 2. Solecisms, Barbarisms, Improprieties. 3. Vocabulary.

Department of Library Work

Irene Warren

The Library Department of the Chicago Institute has been planned to meet the needs of the teacher. The large libraries in Chicago with their fine special collections open to students offer excellent opportunities for research in various lines and permit the Chicago Institute to expend its funds on those books which are peculiarly adapted to the teacher's use. The Chicago Institute library now con-

sists of some 12,000 volumes, many maps, charts, pamphlets, and clippings. There is also a collection of 22,000 pictures, carefully chosen to illustrate the work in the school. All books and pictures have been catalogued and classified according to the most improved methods. The library will serve as a working laboratory for every department of the institute; it will not only furnish supplementary reading for the children, but will supply illustrated bulletins for home reading, and for special day exercises. For example, at Christmas time the books, magazine articles, and pictures relating to the season will be listed upon a large placard, with attractive drawings. It is expected that these bulletins will give the children a glimpse of the endless opportunity for individual knowledge and pleasure to be found in books.

The instruction in the use of libraries and books is not a technical course in library economy; only that phase of the subject will be presented which will help the teachers in the use of libraries and assist them in the organization and management of their own school libraries. The various records necessary will be explained, and such students as have definite library work to do in schools, and therefore wish to know more of the technical methods, will be given an opportunity for practical experience. Exhibits of books and material will be made throughout the course, and the libraries in Chicago and vicinity will be visited.

Many cities are working for a closer relation of libraries and schools. The teachers are allowed special cards to the libraries which entitle them to draw more than the regulation number of books, and are permitted free access to the stack-rooms. Special rooms have been fitted up where a teacher may take a class and have all the books on a given subject ready for her use. It has been found advantageous to have the superintendent of schools a member of the public library board. In some cities the public library will loan to every room of every school a collection of books, one for every child, to be kept a month or term as needed. The librarians visit the schools and tell the teachers and pupils of its valuable collections and invite them to use the public library freely. The librarians know the school curriculum and make out classified lists of books relative to the school studies, lists for vacation reading, anniversaries, and holidays, bulletin them in the libraries and send copies to the schools. Every teacher should know how to use the library to the best advantage. The library section of the National Educational Association sent out a circular last year to libraries and schools all over the country, saying that "Normal schools and all schools having to do with the training of teachers should train their students in the use of books and libraries."

Few school libraries are able to do satisfactory work, because of lack of funds and lack of care. There will be a discussion of a plan for making the public library a part of the public educational system of a city. The furnishing of reading material for the schools would then be systematically divided between the board of education and the public library board. The school would furnish the necessary reference books and sets of supplementary readers. The public library would make every school a delivery station, furnishing a small collection of books on such subjects as would correlate with the school work, together with a certain amount of fiction.

The following is an outline of the course:

1. **Relation of Libraries and Schools.** — Laws regarding the establishment and mainte-

nance of public libraries and public school libraries. The public library as a part of the educational system. Instruction in the use of books and libraries. Constructive work illustrating the making of a book. Courses given in colleges, normal schools, and public libraries.

2. **Children's Books and Libraries.** — Children's books and periodicals. Illustrations of children's books. Children's reading-rooms; their aim, character of books and periodicals, the attendants, reading lists, and furnishings. Maxon book-mark. Library league. Bulletins for libraries and schoolrooms. Home libraries.

3. **Organization and Administration.** — Ordering and buying. Accessioning. Shelf-listing. Charging systems. Classification; based on the Dewey Decimal Classification. Modifications of the system in this library explained. Cataloguing; the cataloguing will be taught according to the New York State Library School Rules adapted to a school library.

4. **Bibliography and Reference Work.** — Comparative value of dictionaries, indexes, cyclopædias, and handbooks. Trade bibliography and bibliography of special subjects. Book reviews and magazines.

5. **Pictures, Posters, Maps, and Charts.** — Collecting, mounting, arrangement, and use. Exhibits. Care and preservation. Note-taking and library devices.

6. **Work of Library Schools and Associations.** — American library associations. Library section of the National Educational Association. State library associations. Library sections of state teachers' associations. City library clubs. Traveling libraries; work done in New York and Wisconsin. State library commissions. Farmers' reading courses. Instruction in library economy: University of Illinois, New York State Library, Pratt Institute, Drexel Institute, summer courses at University of Wisconsin and Amherst College, apprenticeship in public libraries.

7. **History of the Making of Books.** — Manuscripts. Illuminating. Illustrating. Printing. Binding.

REFERENCES:

New York State Library School Rules for Catalogue, Accession book, and Shelf-list. Library Bureau, 1899. *Catalogue of A. L. A. Library*, 5,000 volumes for a popular library selected by the American Library Association and shown at the World's Fair. U. S. Bureau of Education, 1893. A. L. A. list of subject headings for a dictionary catalogue. Library Bureau. Library Bureau Catalogue, containing lists of library tools and fittings. Plummer. *Hints to Small Libraries.* Tuslova and Comba, New York, 1898. *Public Library Handbook* by the Denver Public Library. Carson, Harper, 1894. Leypoldt and Iles. *List of Books for Girls and Women and Their Clubs.* Library Bureau, 1895. Dana. *Library Primer.* Library Bureau, 1899. Sargent. *Reading for the Young, and Supplement.* Houghton, 1896. Hewins. *List of Books for Girls and Boys.* Library Bureau. Files of the Library Journal and Public Libraries. Various publishers' catalogues and bulletins of libraries.

Department of Music

Helen Goodrich Bertha Payne

The purpose of this course is to lead teachers to understand and produce valid musical effects without great technical proficiency. It will endeavor to make clear the relation between thought and emotion and the musical means of expression. There is a vast amount of dormant capacity among so-called unmusical people. We may look forward to beautiful and joyous self-expression in singing for practically all children as soon as the standard as to technical requirements and material is corrected by reference to their real needs, mental, moral, and physical.

The plan of this course includes much class-drill in the fundamentals of natural tone-production, and in song-singing in parts and in unison. Exercises in speech will be given as a means of securing purity of vowel sounds, and smooth, exact consonant formation, together with exercises for control of the breath in singing. Con-

nection between text and music will be worked out, looking toward a fuller expression of thought and emotion. Melodies will be studied as material for work in pitch, rhythm and sight-reading. There will be suggestive talks upon the relation of singing to speech, science-work, history, and literature, geography, and physical culture; also, upon folk-songs.

The subject of choice of songs will be discussed throughout the course. The classical type, the sentimental, and the Froebelian will be discussed, and the marks of a good or bad song will be shown, with illustrations.

I. Breathing: Exercises for developing diaphragm control and strength. Exhalation on vowel sounds.

II. Speech: Exercises for evolving a singing tone from speech. Drill upon pure vowel coloring and consonants.

III. Tone Production: Poise, attack, physiological succession of the vowels in their relation to voice development. Balance between registers.

IV. Studies: Sight-reading and interval-drill by means of melodic studies developed from known songs. Scale work—major, minor, chromatic.

V. Song Study: Rhythm; attack; meaning and relation of text and tune.

VI. Historical Development: Expression of religious feeling; relation to national life, to rhythmic movement. Effect of environment upon musical expression; songs of the mountains, sailor songs, wanderer's songs, trade songs, lullabies, marching songs. Correlation of music, elocution, science, literature, and history.

LIST OF SONGS RECOMMENDED FOR STUDY.

Children's Songs, by Reinecke, Rheinberger, Schumann, Brahms, Elliott, Gilchrist, Eleanor Smith.

Folk-Songs: Collection of Irish Songs, Villiers Stanford; *Pan Pipes* (Old English); *Ausländische Liederschatz* (Peters' Edition); *Internationales Volksliederbuch*, Reimann; *Songs of Life and Nature*, Eleanor Smith; *Historical Specimens*, Vol. K, Curwen; *National Music*, Carl Engel.

NOTE.—The songs published in the July COURSE OF STUDY will be used in these classes. It is suggested that those who intend taking this course should familiarize themselves with the text of the songs.

Round Table Meetings

Held by the Heads of Departments

As announced on the program, every afternoon, from 3:30 to 4:10, will be devoted to round table meetings in which the heads of departments will discuss questions relating to their particular subjects. Col. Parker's outlines, considering arithmetic as a study in measuring quantity, and Mrs. Washburne's, relating the work of the home and the school, belong to this course and are given below:

A Study in Measuring Quantity

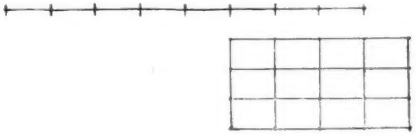
Francis W. Parker

I. The function of Arithmetic is to measure quantity.

(a) Space and magnitude are measured

1. By length or distance. Feet, yards, miles, etc.

2. By areas, length and breadth, square inches, square yards, acres, etc.



3. By volume, length, breadth, and thickness. (b) Bulk is measured by pecks, bushels, etc. (c) Gravitation or weight is measured by pounds, tons, etc. (Scales.) (d) Force is measured by horse power, pounds of steam, volts and amperes of electricity, etc. (e) Time is measured by minutes, hours, centuries, etc. (Face of clock.) (f) Equivalents in value are measured by cents, dollars, francs, marks, pounds, etc. (g) Single things like trees, houses, men, beasts, may be measured by ones or any unit of ones.

II. Division of quantity.

Operations by which number may be used to measure quantity. (These definitions and explanations are considered entirely from the standpoint of measuring quantity, and not from any definition of number itself. Abstract number is not here discussed.)

(a) A quantity may be divided into equal quantities.

NOTE.—The student is requested to use quantities of various kinds and divide them into equal quantities without using written figures.

1. *Division* consists in dividing a quantity into a number of equal quantities, in order to find the *number* of equal quantities in that quantity.

NOTE.—The word *separation* should not be used, as it signifies a physical act. Division is a mental operation.

2. The divisor is one of the equal quantities into which the dividend is to be divided. Question: How many fours of marks are there in twelve marks?

3. The quotient is the number of equal quantities into which a quantity is divided.

Dividend } ..... { What is the divisor?
} ..... { What is the quotient?

NOTE.—Illustrate this by many problems in division. Conventional form $12 \div 4 = 3$.

Question: Which is the larger *quantity*, the dividend as a quantity or the quotient as a quantity?

You have twelve apples. Divide them into three fours of apples. Which is the larger quantity, twelve apples or three fours of apples?

(b) The *partition* consists in parting or dividing a quantity into equal parts, in order to find the quantity *in one part*.

.... Partend.

1. The partend is a quantity to be divided into equal parts.

2. The divisor is the number of quantities into which the partend is to be divided.

(.... .... into thirds.)

3. The quotient is the quantity in one of the equal parts of a quantity. .... Conventional form, $\frac{1}{3}$ of $12 = 4$, quotient.

(c) Division and partition compared.

1. In division, the dividend is the quantity to be divided *into equal parts*.

2. In partition, the partend is the quantity to be divided *into equal parts*.

3. In division, the divisor is *one of the equal quantities* into which a quantity is to be divided.

4. In partition, the divisor is the *number of equal quantities* into which a quantity is to be parted.

5. In division, the quotient (considered as a definite quantity) *is the number of equal quantities in a quantity*.

6. In partition, the quotient is *the quantity of which one equal part of the quantity divided consists*.

NOTE.—Students may understand the *abstract* definitions of number, and the fundamental operations when they study higher mathematics in the university. They do not understand them in the elementary school. Hence the confusion, haziness and mystery concerning number. All children are able to measure quantities and may fully understand the operations.

(d) Subtraction is the division of a quantity into two quantities, one of which is known.

1. The minuend is a quantity to be divided into two quantities.

2. The subtrahend is the known quantity.

3. The remainder is the quantity found after division.

Conclusion: A quantity may be divided into equal quantities, equal parts, into two quantities, equal or unequal.

III. Uniting quantities.

Multiplication is the uniting of equal quantities.

1. The multiplicand is one of the equal quantities to be united.

2. The multiplier is the number of equal quantities to be united.

3. The product is the equal quantities united.

NOTE.—Division is dividing a quantity into a number of equal quantities. Multiplication is uniting a number of equal quantities.

NOTE.—"Division is dividing" is an awkward expression, but there is no word to take the place of "dividing."

(e) Addition is uniting a number of quantities, equal or unequal.

1. The addenda are the quantities to be united.

2. The sum is the quantities united.

Conclusion: Quantities may be united.

NOTE.—Children may discover all these definitions of the fundamental operations and thoroughly comprehend them. Oftentimes, adults who look through memorized definitions have difficulty in understanding that which can be understood only by studying without prejudice the function of number in measuring.

Relations of Home and School

A Series of Round Tables for Parents

MARION FOSTER WASHBURNE

I. Training the Body.—Physical training; corrective gymnastics; nutrition; sanitation; ventilation; habitual attitudes; clothing; rhythm of fatigue; laws of growth. How shall the child be brought to care for his own body, without anxiety or self-consciousness?

II. Training the Mind.—What knowledge is worth while? Why? The doctrine of interest. The place of drill. The central subjects of study—nature-study, geography, and history—as mind-nutrition. Relations of the body and the mind; manual training; home occupations. Expression: its reaction upon thought; reading and writing; clay modeling, painting, drawing, singing, oral reading. The effect of home training upon expression.

III. Training the Will.—Freedom essential to the right development of the will. Power of resistance; of initiative; of endurance. The desire to make, to express, to know, to help. The value of right motive. The use of happiness. The question of punishments and rewards. Discipline: shall subjects be studied merely as mental discipline? Order: What is true order? Respect for the rights of others.

IV. The Whole Child.—Under what ideal can the child develop best in all these directions? Character-building versus knowledge-getting. The demand made by community-life. The doctrine of immediate use. Altruism as an evolutionary force.

The Department of Applied Pedagogy

Flora J. Cooke

It will be observed that each department of this school presents and emphasizes the pedagogy of its own subject in the COURSE OF STUDY, and it might be inferred that a special department of applied pedagogy would be superfluous.

It finds its justification in the fact that the grades are the laboratories of the departments, wherein each head of a department tests the value of his ideas and feels the full responsibility for the results. He can judge of the value of his ideas only when he knows how the work was executed, how the children reacted to the stimuli presented, and how the plan was modified or adapted, according to the interests and experience of the children; and for this knowledge he must depend to a large extent upon the reports of the teachers who are in daily contact with the children.

Therefore, in order that each grade teacher might have the intelligent co-operation and criticism of her co-workers, the president of the school has for many years required his grade teachers to outline their work for each month. This is the work which will appear in the Chicago Institute COURSE OF STUDY during the ensuing year under the head of Applied Pedagogy.

The department proposes each month:

1. To show how the course of study for each grade is made, *i. e.*, what guides and determines the work for each particular class of children. In the outline the teacher will show whether she fully understands and appreciates the work suggested by each department of the school, and how far her children receive the benefit of the judgment and experience of the entire faculty.

2. To illustrate the method of each teacher in studying the interests, experience, and stages of development of the children under her supervision as manifested in their voluntary activities, and to show how the recognition of their fundamental activities and interests is the basis for the selection of work in every grade.

3. To present a detailed outline of work in each subject studied during the month—in geography, nature-work or science, history, literature, music, and in such fundamental social activities as sewing, cooking, gardening, and all forms of physical or manual training. The parents are requested to aid the teachers

in testing the value of the work by noting its influence upon the children in the home, on the playground, and in all forms of spontaneous action.

4. To give clearly the present working hypothesis regarding the teaching of reading, writing, mathematics, and the modes of expression, so that all may understand and discuss the work as to effectiveness or weakness from the same general point of view.

5. To state the ideal by which the work is tested—whether through it the children are growing naturally into good taste, good habits, and are improving in power, skill, and self-control.

In this number of the COURSE OF STUDY the outlines pertain entirely to the work of the Summer School.

For convenience it is presented in three sections, which will be given in detail below under the following headings:

1. *Methods of Concentration in the Primary Grades.*

This course appears upon the program as primary methods. It comes in the forenoon and is subject to same rules as the other subjects named there, as Geography, History, etc.

2. *The Model School,*

Consisting of a kindergarten and two primary grades. This section will be free to all taking the work in any four departments of the school.

3. *Round Table Section,*

Consisting of (a) one round table meeting each week for the purpose of discussing the work observed in the grades. (b) A series of six lessons upon selected topics as outlined below.

Methods of Concentration in the Primary Grades

Flora J. Cooke

This course consists of a series of practical discussions of the experiences and discoveries of the last few years in regard to children in the primary grades. There has been a continued effort in many places to discover the fundamental interests of children and the form of self-activity best suited to their development. In this course the students will be expected to compare the results of their own daily observations of the children with the conclusions reached by the child-study experts.

As preparation for these discussions, teachers will find it well to make themselves familiar with the course of study of various noted schools, as, for example, the Horace Mann School connected with the Teachers' College and the Felix Adler Ethical Culture School, both of New York City; the University Elementary School, of Chicago; and the Chicago Normal School. The public school reports of New York, Washington, Philadelphia, Chicago, Boston, and San Francisco will also be found suggestive. This material can be obtained in most cases for the trouble of a letter to the superintendents or principals of the schools, and the cost of postage. If all those attending, and, it is hoped, taking part in the discussions, understand what forms of art and manual training are prevailing throughout the country, and what is considered essential in elementary education at present, they will not fail to have the interest necessary to any adequate consideration of the subject.

In this presentation the points for discussion have been grouped together for convenience; but in actual practice the topics outlined as the last part of the course, such as reading, seat-work, number, etc., will receive equal attention with the central subjects of study—geography, history, nature study and literature. The teaching of these so-called "first essentials" in education will therefore be discussed from various points of view throughout the course.

Lists of Topics for Discussion

1st Topic—Discussion of the essentials of a course of study for the primary grades.

2d Topic—History—Life and interest of the children the determining guide in the work. Work of a year outlined and discussed as follows:

1. (a) Description of a play-house (16 ft. x 18 ft. x 8 ft.) which a class of seventh and eighth grade children planned and constructed upon their school grounds for the use of the younger children of the school. (b) Division of labor and the character of the work which each grade in the school contributed. (c) Probable effect upon the little children, as they entertain in it, preparing refreshments and looking after the comfort and enjoyment of their guests. (d) Problem of the heating, lighting, and ventilation of the house.

2. Description of a continued constructive play. It value tested by its reaction upon the children. (See models made by children.) (a) Planning of the house. (b) Studying of designs for wall-paper, oil-cloth, and carpets. (c) Modeling, decorating, and baking of a set of clay dishes. (d) Study of wood necessary for furnishing the rooms. (e) Inventions in cooking of food. Stories of efforts of primitive peoples in the same directions. (f) Trip to Art Gallery and selection of pictures for the house.

3. (a) Meaning of the home to children, its comforts, etc. (b) Construction of simple models by children of a house which would protect them in each season. (c) Comparison of their work with that of other peoples—Indians, Eskimos, and Pilgrims, etc. (d) Influence of environment upon the life and work of a people.

4. Stories of industry and invention. Necessity precedes invention, and these stories are given when the children have made sufficient observations to enable them to understand the invention.

5. Stories which embody ideals of courage, generosity, patience, strength, wisdom, unselfishness, kindness to animals, are selected, for the reason that the children imitate what they admire, and for the unconscious influence thus exerted upon character.

3d. Topic—*Literature:* (a) The selection, adaptation and telling of stories. (b) The place of myths and fairy stories in a course of study. (c) Discussion of a suggested list of stories told in connection with nature study, history, geography, etc. (d) Basis of the selection of such stories. (e) Effect of good literature upon speech and written expression. (f) Its intellectual reaction upon observation.

4th Topic—*Domestic Science and Arts:* (a) Value of the primitive industries and arts in the early education of children. (b) The importance of simple work in school economics, sanitation, and hygiene in establishing an ideal of the primary conditions of good health in a community. (c) Cooking, sewing, and making in wood, discussed from an educational point of view. (d) The necessary correlation of such work with the central subject of study. (e) Discussion of the necessary equipment and illustrations of the kinds and costs of materials used in various schools.

5th Topic—*Nature Study:* Discussion of outlines in Nature Study, illustrated by the experiments and expression of the children in the primary grades.

1. (a) Subject-matter fitted to bring children into contact with Nature's phenomena. (b) How to lead children unconsciously to appreciate their responsibility to themselves and to the community.

2. Subject-Matter. (a) Relating to the necessities of life—food, air, water, hygienic living, etc. (b) Relating to the industrial arts of the community. (c) Relating to the æsthetic development of the children. (d) Expression; relation of reading and writing to such study. (e) Necessity of number (illustrated by work with the children).

3. Field Trips—considered as the foundation of work in the schoolroom. (a) Use of experiments. (b) Study of types of landscapes in the vicinity—swamp, lake shore, sand dunes, etc. (c) Purpose of such study.

6th Topic—*Number:* (a) Its place in the life of a child. (b) Discussion of the number required for clear imaging in nature study, geography and history. (c) The teaching of processes and arithmetical facts to little children. (d) The place of drill. (e) Outline of a year's work in number with a class of primary children.

7th Topic—*Seat Work:* (a) Essentials; kinds of work which arouse the best independent efforts of the children. (b) Standpoint of criticism. (c) Choice of material. (d) Discussion of a detailed outline of seat work for a year. (e) Its probable results in habits, taste, knowledge and skill. (f) Discussion of models made by the children.

[NOTE.—The teachers will be given an opportunity to make any or all of these articles—books, boxes, envelopes, tools and apparatus—under the direction of the Manual Training Department.]

8th Topic—*Reading:* (a) Its purpose. (b) Methods of teaching reading compared. (c) Relative value of oral and silent reading in the

schoolroom; special function of each. (d) Mechanics of reading. Teaching new words, and words the meaning of which it is not easy to make clear, such as connectives, and some adjectives and pronouns; necessary repetition of words; use and place of phonics; use of the dictionary. (e) Preparation of a good reading lesson. (f) Discussion of typical reading lessons; reading for comparison of observation and experience, for information, for delight in expression. (g) The place and purpose of a reading, recitation, or lesson upon the daily school program; the final test of a good reading lesson.

9th Topic—*Expression:* (a) Value of the various modes of expression in a child's development. (b) The reason for choice—from the child's standpoint, from the adult's. (c) Relation between a child's oral and written vocabulary. (d) Economy in the teaching of language, spelling, grammar, punctuation, and capitalization. (e) Methods of teaching writing compared. (f) Comparison of the purpose and basis of this form of expression with those of drawing, painting, modeling, and dramatic action. (g) Necessity and place of drill and direction in all expression work. (h) The influence upon children of songs, games, gymnastics, manual training, and dramatization of stories; effect of artistic surroundings.

10th Topic—*Final Discussion of Courses of Study for the Primary Grades:* Values compared: (a) The ideal of the teacher. (b) The governing motive of the children. (c) The self-activity exercised by the children. (d) The kind and quality of expression necessitated. (e) The habits established by the work. (f) The intrinsic value of the subject-matter. (g) The results in knowledge. (h) The results in skill. (i) The amount of drill required, etc. (j) The recognition and treatment of natural fatigue and of temporary weakness. (k) The recognition and treatment of physical, mental and moral defects. (l) The recognition and treatment of the child's individual interests and marked peculiarities.

The Model School

Kindergarten, daily session from 8:50 to 10:30 A. M. in Kindergarten Room.

Primary Department, 1st and 4th grade class, daily session from 1:30 to 3:30 P. M. in Chapel Hall.

Ideally the work of the Model School should in no way differ from the regular school work of the year. It should be conducted by the several grade teachers, in their respective rooms, under natural conditions.

At present, however, there is but one room available for our use, and it was decided that for this year all the teachers should work together in one primary department, and make the work as suggestive as possible to the observers in the Model School.

The work is correlated around the life and interests of the children, and this necessarily brings about a correlation in subject-matter. An external correlation is not the most essential consideration, and a brief summary of the various outlines may illustrate this point.

Miss Bradley conducts the study of local conditions in nature. In her work the children are constantly brought into direct contact with typical natural areas in the environment of the school, such as swamp, forest, lake, beach, and prairie, and discover the chief characteristics of the soil, minerals, plants, and animals of each section.

Miss Stilwell, in geography, plans to have the 4th grade children begin the study of local conditions. In six weeks they cannot realize the full meaning of the situation of Chicago with reference to the lake shore. They can determine, however, from actual observation, the local effects of different shore lines, and easily gather sufficient data to discover the chief physical causes which led to Chicago's settlement and growth.

Miss Mitchell continues the study of local conditions from the historical standpoint. The question of what is fundamental to a city, and the necessary qualities of a good citizen, are difficult to discover in the complexity of a great city like Chicago. She therefore proposes that the child study his present condition in the light of the life of primitive peoples. He here meets and solves simple problems and applies the knowledge thus gained to the interpretation of his own life and environment.

Miss Van Hoesen's work in mathematics is necessarily correlated with every subject in the Model School curriculum. In every case the children use the number processes only as necessary means to desired ends. They construct working plans, and make apparatus, tools, and articles needed for use in the Model School and the home. Through actual measurement they

gain definite ideas of physical growth, strength, and development, which form the basis of their judgments in science, history, geography, and sloyd work. Incidentally such standard units of measurement as the foot, yard, pound, quart, and gallon are functioned through use.

Drill in mathematics is understood by the child as a means of helping him to overcome obstacles between himself and a desired goal.

Two hours each week the children will work in the sloyd room under the direction of Mr. Carley or Miss Champlin. During this time they will construct in wood the apparatus necessary for immediate use in their work—such as the stretcher-frame for art work and the clinometer.

During the library periods the children will use books, pictures, and maps under the direction of Miss Warren and the teacher in the Model School.

Without further explanation it will be found that the outline of Miss Cooke in literature, and that of Miss Hollister in art, Miss Payne in music, and Miss Crawford in physical culture are based upon the same principles. They illustrate not only the individual methods of each teacher, but also show that all are dominated by the same general spirit and purpose.

Nature Study in the Model School

Harriet Towle Bradley

Special emphasis will be placed upon field work. It is desirable that the teachers observing the work be as familiar as possible with the experiences and problems of the children. For that reason the region selected for study will be that about Winnetka, described in the syllabi of the departments of Geography, Nature Study, Mathematics, and Art, as well as the immediate environment of the school.

All of the class-room work of the children will be based upon the experiences gained by them during the field trips. Indoors and in the field the aim will be to have the children give full expression to their thoughts and feelings in art, language, dramatic representation, and song. The object of the summer's work is that the children may realize and thoroughly enjoy the beauty of the summer landscape.

Field Work for Both Grades

Three phases of field work will be considered:

I. The topographic forms of the region visited, namely: 1, the upland; 2, the ravines; 3, the lake cliff; 4, the beach; 5, the old beach ridges; 6, the swamps. The most important features of this work will be: (a) Sketching with crayon and water colors. (b) Taking photographs. (c) Collection of stones found on beach and bluff, and of specimens of soil from each area. (d) A trip to the Winnetka observatory, where a view showing general topographic relations can be obtained.

II. The vegetation of the region. Characteristic floras of: 1, the prairie; 2, the swamp; 3, the upland forest; 4, the ravine; 5, the lake cliff; 6, the beach ridge; 7, the present beach. The main features of the work will be: (a) Painting of the different areas to show character of vegetation. (b) Sketching trees, shrubs, or herbs which have special significance in any of the areas. (c) Taking photographs of typical tree forms, lianas, etc. (d) Collection of twigs, leaves, roots, seeds, mosses, bowlders with lichens, specimens of different woods. (e) Games and songs for the field. (f) Dramatization of stories and myths.

The children will also make one trip to the Field Columbian Museum to see the economic products of plants.

III. Animal life of the region. A study of the various animal forms found in the different areas. 1, the swamp; 2, the forest; 3, the prairie; 4, the stream; 5, the beach; 6, the lake. (a) The food of the various animals and their ways of obtaining it. (b) Their homes and means of protection. (c) Their range and means of locomotion. The main features of the work will be: (a) Record of the birds in color. (b) Imitation of bird notes. (c) Dramatization of stories and myths. (d) Collection of insects, frogs, etc., for study in the schoolroom whenever the proper food can be obtained.

In connection with this work the children will visit the Lincoln Park Zoölogical Gardens and the Academy of Sciences.

Suggestive Problems upon the Winnetka Area

(1) Comparative depths and widths of the ravine near mouth and source of stream. (2) Angle at which tributaries enter main stream. (3) The height of the line of winter drift-wood on the beach. (4) Proportion of the different kinds of trees found on given area, on beach, cliff, upland, ravine slope, swamp, beach ridge. (Make diagram showing same.) (5) Per cent of leaves of different trees, shrubs, and herbs which are used for food by insects: per cent used as homes. (6) Amount of soil brought up by earth worms on different areas selected. (7) Amount of water retained by various soils during a rain. Amount evaporated in a given time. Amount of organic matter in soils. Amount of sand, gravel, clay, etc. (8) Using data obtained in (7), calculate and put in tangible form the amount of organic matter, water, etc., found in the surface soil of areas studied (see 4). (9) Comparison of new growth of different plants studied. (10) Comparison of area of leaf surface relative to amount of transpiration as found by experiment.

Indoor Work

The initiative of the children, as illustrated by their interest and questions, will be recognized as the fundamental basis of all experiments, and of reading, writing, and number. On the other hand, the teacher must prepare to present the best possible conditions for self-activity, and be ready to meet and encourage the children at every step. The child may or may not follow the plan of work mapped out here. It is flexible and subject to daily change.

The first and fourth grades will necessarily meet the same general problems upon their field trips. Their work will be determined by their interest, mental power, experiences, and physical strength.

The fourth grade will study the topography of the region, construct simple maps or diagrams to show vegetation, and model in clay, to a given scale, a section of each of the typical regions—swamp, prairie, forest, stream, cliff, and beach. They will also construct a background of paper, upon which will be represented in water color the general appearance of the landscape and the types of plants, birds, and insects characteristic of each section.

The first grade children will bring their collections of soil, stones, water, plants, and animals to these models, and test their observation by attempting to distribute them properly. They will be assisted and supervised by fourth grade children.

It is not intended that these models shall be finished fac-similes of the sections represented; they are designed merely to aid the children in recognizing the fundamental relationships of the animals, plants, and soils of the various localities. In this way the children will have their data and collected material roughly classified in groups and their indoor work will consist in comparing the groups as to their chief characteristics.

In connection with all of the work experiments will be made which will help the children to answer the questions which arise in the field and class-room. Directions for such experiments will be typewritten for the use of the teachers who wish to observe the work.

Reading matter in connection with the work will be selected from literary sources. The necessary notes and records will require daily exercise in written expression. The records and paintings will be preserved in portfolios made by the children.

The probable points for observation and discussion will be:

I. The comparison of stones. Classification as to locality. Examination of stones from different areas as to size, color, form, constituents and amount or weathering. Reasons for differences. Comparison of these stones with those in common economic use.

II. The comparison of soils. Classification as to locality. Examination of constituents of each kind of soil by sifting, washing, and burn-

ing. Investigation of the properties of the various soils. Inferences as to the function of each.

III. Comparison of plants. Classification as to locality. Comparison of herbaceous plants of the different areas as to roots, stems, and leaves. Recording of obvious reasons for the differences noted. Comparison of trees found in different areas. Examination of twigs to show manner and rate of growth; relation of trees to birds and insects; recording of observations in writing, drawing, and painting. Economic value of trees, wood, fruit, seeds, bark and roots.

IV. Comparison of animals. Classification as to locality. Record of insects seen. Method of identification. Insects which aid plants. Insects which injure plants. Work of animals in the different soils. Record of birds seen. Identification from description. Imitation of bird notes. Comparison of birds seen as to: (a) Manner of flight. (b) Kind of food. (c) Manner of nesting.

At the end of six weeks a stereopticon entertainment will be given by the children. In it the children of each grade will describe what they have seen, done, and made for the benefit of the others, and this entertainment will be the apparent motive for some of the close observation at the Museum and in the field. Many of the slides used will be made from pictures taken upon the trips.

Geography for the Fourth Grade, Correlated with the Study of Local Conditions

Katharine M. Stilwell

Motive—To show the relation of shore lines to the settlement and development of any region. Material—Writing, painting, drawing, and modeling material, compass, clinometer, pictures, camera, stereopticon, maps, reading matter, and materials for the various experiments to be made. Method—Field work and class discussion.

I. Field Work.—1. Shore of Lake Michigan north of Chicago, sandy beach at Edgewater, cliffs at Winnetka, coastal plain at Waukegan, Ill., and the sand dunes at Dune Park, Ind. 2. Points to be observed: (a) Shore currents and the processes of erosion in cliffs, terraces and cliffs; the starting of river valleys in the form of gullies. (b) The formation of beaches, spits, barriers, terraces, dunes, and deltas. 3. Children sketch the various forms observed. 4. Collect specimens of rock, sand, and pebbles. 5. Photograph salient features for further study.

II. Class Study will be continued by means of oral discussion and other forms of expression, as partially indicated below, and by the use of stereopticon views, and other pictures presented by the teacher. 1. Expression—Making clinometers and field bags. Painting or sketching the various land forms, and illustrating erosion and deposition. Drawings illustrating experiments. Modeling the land forms observed. Experiments as needed to explain points under consideration. Children will be led to devise their own experiments. Writing used continually as a means of expression of thought. Reading papers written by children, as well as articles from different sources, giving information on the topics of study. This reading will be used (a) to supplement the knowledge gained by observation, (b) as a means of acquiring information not otherwise to be gained.

2. Points to be considered: (a) Situation of Chicago with reference to the lake shore; cause of this location. (b) Topographical features of the lake shore. The character and amount of work done on the following topics will be determined by the attitude of the class toward it:

(b^1) Littoral Erosion. Agent—The wave. Process—(Class observe. Illustrate). Conditions favoring and retarding erosion. Effect of gravity. Weathering. Forms of land produced by erosion. Sea cliffs and wave-cut terraces.

(b^2) Littoral Transportation. Agent—Joint action of waves and currents. Observation as to method. Direction of wind. Shore drift or beach, and barriers; relation of the two; history of lagoons. Class will determine

(through experiment) the relation of the transporting power to velocity, volume, and slope.

(b^3) Littoral Deposition. Material: Shore drift, detritus delivered by streams. Conditions of deposition determined by observation and experiment. Effect of fresh water, salt water, volume, and velocity. Manner of sorting and depositing. Land forms: Spit, bar, hook, wave-built terrace. Show pictures of these as formed in the Great Lakes. Use United States Engineer maps. Deltas: How made. Conditions necessary. Some important ones. Their effect. Sand Dunes: (not an essential feature, but often present.) Where formed. Process. Conditions necessary. Shape and height of dunes at Dune Park. Relation to the prevailing wind. Shape, size, and arrangement of material. Value of dunes to the coast. Migrating dunes.

(c) Bearing of these shore features on the location and development of Chicago. Other factors in the city's growth.

(d) Study of other shore lines. Their effect upon settlement, harbors, commerce, fishing, climate, vegetation, and naval power of country. Shore of New England. Shore of Virginia and South Carolina. Coast of England. Fiords of Norway. Use pictures from picture collection and stereopticon views.

READING FOR PUPILS.

Stories of Dunes in France and Holland, C. N. S. Leaflets, McIntyre; *Waters of the Ocean*, Geographical Readers, Albert; *Coast of England*, Geographical Reader, No. 2, Blackwood's; *This World of Ours*, Arnold-Forster; *Deltas, Coast of England*, Geographical Reader, Standard 3, Chambers; *North America*, Carpenter; *Geographical Reader*, King.

REFERENCES FOR TEACHERS.

Rocks and Rock Weathering, Merrill; *Geography of Chicago and Its Environs*, Geographical Society Bulletin, No. 1; *Common Minerals and Rocks*, Crosby; *Short History of Great Lakes*, Shaler; *Studies in Indiana Geography*, Dryer; *U. S. Geological Survey*, Fifth Annual Report, Vol. I.; *Geology of Wisconsin*, Chamberlain: *Geology of the Henry Mountains*, Gilbert; *Monographs of National Geographical Society, Shore Line Topography*, Gulliver; Vol. XXIV., No. 8, *Proceedings of American Academy of Arts and Sciences.*

History Lessons for Fourth Grade, Correlated with Study of Local Conditions

Clara I. Mitchell

General Subject—Building of a City.

1. Environment of our own life compared with that of a man of the Stone Age—(1) in a forest, (2) in a mountainous or hilly district, (3) on a plain, (4) near a body of water.

Influence of each kind of environment in determining methods of food-getting, clothing, protection, and social life.

2. Hunter's life as satisfying in the most primitive way man's need of food and clothing; illustrated by neolithic man of western Europe. Beginnings of industrial arts brought about by the activities of hunter life. (a) Chipping of stone for weapons. (b) Sewing of skins by means of bone needle. (c) Basket-weaving. (d) Invention of pottery.

Beginnings of science discovered and applied in: (a) Use of stone ax. (b) Invention of bow and arrow. (c) Observation of plant and animal life. (d) Knowledge of meteorological conditions. (e) Use of fire and cooking. (f) Use of trees, caves, caverns, rocks, and bodies of water as affording protection for dwellings. Beginnings of religion in nature worship.

3. Pastoral life. Illustrated by early Aryan tribes of Central Europe. Dependence upon animal food leading to domestication of animals and the life of herding. Dog, ox, sheep. Necessity for pasturage leading people from mountains to grassy plains. Possession of herds the beginning of property-holding. Necessity for the protection of property. Gathering of individuals into communities for mutual protection. Communal life. Families, clans, tribes.

Beginnings of building. Rude huts for habitation. Use of upright posts as supports and slanting roof for drainage. The walled village. Community life demanding the division of labor. Need of law in regulation of community life. Idea of leadership. Choice of leaders. Patriarchal form of government.

4. Village Life. Illustrated by ancient Lake Dwellers of Switzerland. Sufficient food-supply a security against enemies. Protected community life tending to develop the arts of peace. (a) Building of log huts on piles. (b) Agriculture, barley, wheat, fruit, flax. (c) Weaving. (d) Pottery.

Proximity to water leading to invention of boats, and skill in sailing. Boats and domesticated horses as opening ways of travel and bringing about contact with people. Exchange of commodities. Barter. Commerce the result of industrial productiveness and inventive skill. Importance of commerce as an agent in civilization shown by the use of metal and wool brought into the lake villages by exchange. Further division of labor demanded by metal-working, wood-culture, weaving and dyeing, and by commercial enterprise. Bronze age.

5. Early Iron Age. Illustrated by ancient Troy. Greater refinement of living as shown in: (a) Architecture, use of pillar, art in decoration. (b) Dress. (c) Armor, weapons, and implements. (d) Music. (e) Social intercourse. Development in religion expressed by the temples, tombs, and religious observances. Simple political relations. Priam the father, king, priest. Hector the military leader.

6. A further developed city of the Iron Age. Pictures and stories of Athens at the time of Pericles. Situation of Athens—harbor, mountains, plains. Complicated political relations the result of situation, division of labor, property-holding, differences in religion, and family. Story of the life of Solon and his service to his state. Story of the life of Pericles.

Pictures of Athens showing the acropolis, parthenon, propylæa, lyceum, gymnasiums, academy, town halls, harbor and ships.

Pictures showing architecture of ancient Rome; cities and buildings of the Middle Age; Rouen, Amiens, Cologne, Venice, Paris, Berlin, London, Chicago; early Chicago; excursions to Fort Sheridan, City Hall, Art Institute, Auditorium, Lake Front, South Water street, a railroad freight yard, and a newspaper printing-room.

Discussion as to the use and beauty of these things as children observe them.

Written composition will occur at various points in the course of the lessons as a help to discussion.

Lessons will take the form of oral or written discussion, drawing, painting, modeling, or making.

The beginnings of industries will be taught by means of constructive work in building, modeling, weaving, dyeing, sewing.

Objects to be made by the children: Models of caves, huts, villages, lake dwellings, pillars, and walls; woven baskets; looms; woven rugs; clay dishes; models of human types studied; costumes for these models.

Drawings and paintings will be made as records of field trips and observations.

Reference books: *Man Before Metals*, Joly; *Primitive Man*, Figuier; *The Story of Primitive Man*, Clodd; *Great Races of Mankind*, Ridpath; *Prehistoric Man and Beast*, Hutchinson; *Primitive Culture*, Tylor; *Prehistoric Times*, Lubbock; *Ilios*, Schliemann; Homer's *Iliad; History of Greece*, Curtius; *History of Greece*, Grote; *Aspasia*, Hammerton; *Plutarch's Lives; Encyclopedia Britannica.*

Mathematics

Gertrude Van Hoesen

First Grade

I. Growth.

MOTIVE: To aid the child in his endeavor to account for the changes in nature. In order to image clearly, definite measurement is necessary.

1. Measurement and comparison of heights of the children; *i. e.*, the children will use their own heights as standards of comparison in estimating the heights of objects surrounding them. They will cut strips of paper one inch wide and equal in length to their heights. They will thus acquire familiarity with the foot and inch as standards of measurement.

Questions: Will you measure just the same height a month from now? What makes you grow? What other things about you grow?

The children will discover the change in chest measurement caused by the inhalation and exhalation of breath. They will keep their

first records for future reference and attempt by appropriate breathing exercises and contests to increase the capacity of the lungs. Advantage will be taken of the children's knowledge of the physical properties of air, and science work in this direction will again be emphasized.

2. Trees: How do you know that the trees grow? What caused the change in the spring? Do all trees grow equally that receive about the same amount of heat, light, and moisture and live in the same soil? How can we find out?

Examine twigs of typical trees found upon the different areas selected for study.

Have the children find this year's growth by means of: 1, color; 2, by looking back from the tip of the twig to the first set of rings.

Find last year's growth. Measure this year's growth on a definite number of twigs from each tree. Find average growth for each tree. Comparison of growth from terminal and lateral buds.

Which tree has grown the most?

Which the least?

Expression: The children will cut strips which will show the growth of from four to eight twigs from each tree considered.

NOTE.—If the children have difficulty in using the ruler, especially in the measurement of inches and parts of inches, these difficulties must be overcome before the desired images can be gained. This is the legitimate place for drill.

II. Manual Training or Making.

1. Board for painting or sketching.
2. Portfolio for the children's work.

MOTIVE: These articles are both needed by the children in the science work.

1. Paint-board. First step, a working-drawing or plan. This drawing will be made on paper, full size, to be used as a reference in the Manual Training room.

The working-drawing will consist of two rectangles: The first, 12 by 9½ inches, representing the size of the board; the second, 9½ by 1 inch, representing the upper face of one of the two strips which will be fastened to the underside of the board. The children determine the size of the board, their guide being the purpose that it will serve.

2. Portfolio in which to bind the children's work. It will consist of two pasteboard rectangles, each 11½ by 9 inches. The outer covering for the rectangles must allow for one inch to turn under on each of the four edges. The inside covering must leave a margin of a half inch around the edge. What are the dimensions of the outer covering? The inner? Holes must be punched along one of the short edges of each covered rectangle, one inch apart, having the first hole one inch from the upper edge. How many holes will there be? The rectangles may be laced together with cord which matches the outer covering. When binding the leaves, the holes must correspond along the back edge.

The working-drawing will consist of rectangles corresponding to the pasteboard foundation, the outer covering, and the inner covering.

Fourth Grade

I. Building Materials.

In the building of homes the selection of materials depends upon a knowledge of their qualities, *i. e.*, will they serve the purpose for which they are intended? The question, therefore, is: What governs a choice of building material, ideally and practically?

1. Material used in building houses around us, such as stone, brick, and wood.

2. Sources of each.

3. Chief requisites: Beauty, strength, hardness, and durability. Test building stones, as limestone, sandstone, granite, marble, and quartzite, as well as brick, for: (a) Hardness and strength. (b) Durability. Weigh specimens of each; soak in water over night. Weigh again. Soak for a week, a month. Draw conclusions. Why is limestone used so much around Chicago when our experiments prove that other building stones are to be preferred?

4. What governs our choice of wood? (a) Examine polished specimens. Which is the most beautiful? Where have you seen it used? (b) Get the experience of the children as to hardness, from their work in manual training. (c) Which is the strongest?

The tests must be made with specimens of uniform size, 14x¼x¼ inch. The weights, varying from one-fourth to ten pounds, may be bags of beans or sand, made by the children.

The test, to be of value, must be performed in a uniform way—the weights being hung exactly in the middle of the beam of wood. Draw conclusions.

Problems: If—pounds are required to break a stick of pine 14x¼x¼ inch, how many pounds will be required to break one 14x¼x½ inch? Draw the stick. To break one 14x½x½

inch? 14 x 1 x 1 inch? How many pounds will be required to break one that is 28 x ¼ x ¼ inch?

[NOTE.—If there is doubt have the sticks ready for the children to prove their results.]

Draw the picture of a stick of oak that will require 30 pounds to break it, if it takes 15 pounds to break one 14 x ¼ x ¼ inch.

(d) Why are frame houses painted? Weigh specimens of different woods painted and unpainted. Soak in water. Compare results.

II. Manual Training.

Give the children a choice of three articles: 1. A pencil-box for use in school. 2. A match-safe for use at home. 3. A writing-pad, either for self or for a present. A working-drawing or plan must be made as a guide from which to work. The children will plan the articles, in proportion to their requirements, making a cardboard model first.

The pencil-box will probably be 9x3x2 inches. The working-drawing will consist of three rectangles: (a) 9 x 3 inches, to represent the top and bottom. (b) 9 x 2 inches, to represent the sides. (c) 2 x 3 inches, to represent the ends. How many square inches of wood will be needed for the top and bottom? For the sides? For the ends? The entire box? How many cubic inches will it contain? How many inches of board, 12 inches wide, will you need for the entire box when you go to the Manual Training room, if you allow 2 inches for waste between pieces?

The match-safe consists of a rectangular piece of wood, 6x8 inches, with a half-inch bevel. On the left-hand side is placed the pocket for the matches, which is composed of a semicircular wooden shelf 2 inches in diameter, and a rectangular piece of leather, decorated with pyrographic designs, made by the children. On the right-hand side, a piece of sandpaper 1½ inches by 3 inches, with clipped corners, is placed symmetrically with regard to the shelf.

The working-drawing consists of three rectangles and a semicircle, or half-ellipse, according to the ability of the children.

The first rectangle represents the board, with dotted lines showing the bevel and the definite location of the pocket and sandpaper.

The second rectangle represents the leather.

The third rectangle represents the sandpaper.

The semicircle or half-ellipse represents the shelf.

The writing-blotter consists of a a thin board 12 x 9 inches, with triangular corners of leather, decorated with pyrographic designs, and blotters cut to fit.

Literature and Simple Entertainments by the Children

Flora J. Cooke

During two periods a week the children of each grade will entertain the children of the other grades, and once each week light refreshments will be served. Within certain limits, the children will choose the menu, prepare the food, and serve their guests according to their own plans.

The first grade entertainment, although a matter of choice with the children, will probably include action games, sense games, the guessing game in which they describe the flowers and birds seen upon their field trips, and the telling and dramatization of stories and poems.

The fourth grade will illustrate with models, drawings, pictures, and stereopticon views various subjects which they think the children of the first grade can enjoy. They will also tell and dramatize stories, and teach the little children traditional plays and games.

The teacher will endeavor to make every phase of the work educative as well as pleasant. The stories told by the teacher will in every case have significance in the immediate life and work of the children, and will be selected to arouse such emotions as children can express in their undirected action. They will include such myths and nature stories as may best help the children to see, from another and more beautiful point of view, the things which they have observed in nature; as,

for example, in their study of trees they will be given Lowell's poem, "Rhoecus." In this they will see that the spirit of nature can only companion him who is kind and good. They will also have stories which embody ideals of courage, generosity, wisdom, and kindness to animals. These are intended both to emphasize the work in history and geography, and also to influence the daily actions of the children. *Prometheus*, *Hiawatha*, *Ulysses*, and *King Solomon and the Bees* are illustrative of this type of story. Stories of invention and industry will be told in connection with some invention for which the children feel the need. In them they may compare the results of their own crude efforts with the work of those who, having the same problem, have permanently benefited the world. They thus begin to realize something of the cost of success in any valuable undertaking. The works of the Greeks, and story of Palissey the Potter, are examples of this class of stories. The list of stories which will be used is not given here, for the reason that their choice will depend entirely upon the daily experiences and needs of the children in the Model School. At the end of the session the teachers may obtain summaries of the stories used, with notes and suggestive references.

Art Expression for Primary Grades

Antoinette Hollister

The art expression for primary grades will grow principally out of the work done in nature study. The topography of the Winnetka region is to be crudely represented in miniature by a clay model. For this work the children will be divided into groups, and each group will model in the field one of the areas, all of the groups co-operating afterward in making the model of the whole region.

Material will be brought from the field to illustrate the characteristic flora of these various areas, and careful studies will be made of them at school.

In the later work in the field, sketches will be made of trees, shrubs, or herbs whose presence in this region is significant.

Studies in detail of these plants will show their adaptation to soil and atmospheric conditions.

At the same time the children will study the animal life of this locality and the inter-relation of the plant and animal life, recording with paint or clay their observations as to how the plants are aided by the animals, how injured by them, and with what devices nature protects plants from the ravages of animals.

In order to show the manner and rate of growth of twigs and plants, they will be painted or modeled repeatedly at intervals from the beginning to the end of the school term.

Literature.—Children will be encouraged to reinforce oral expression with art expression, to illustrate stories as they tell them. They will express, also, in this way the thought acquired from the printed page.

Some of this work will be given in the form of games.

Music in the Model School

Bertha Payne

The singing in the grades will be closely correlated with the other work. The songs of nature will be chosen to give expression to thoughts aroused through the out-of-door life. For this purpose songs of water, of trees, of flowers, of insects, and of birds may be used. The songs will be selected for their musical fitness to the children's ability, as well as for the interest in the subject. They will probably be taken from the following list:

FIRST GRADE.

The Apple Tree, Ring Around a Rosy, Dancing Song, Soldiers' Song, Winds of Evening, The Squirrel, The Shell, Dancing Song, and *Water,* all in Primer, Modern Music Series, Scott, Foresman & Co.

FOURTH GRADE.

Where Go the Boats? E. Smith, Song Pictures, Clayton F. Summy Co. *Sea Horses* and *The Brook,* Tyson-Wolff, Second Book, Modern Music Series, Scott, Foresman & Co. *Sicilian Mariners' Song, Lady-Bird, Oriole's Nest Song, Spin, Lassie, Spin, Morning Prayer,* all in First Book, Modern Music Series, Scott, Foresman & Co. *Indian Melodies,* from Baker's work on North American Indians (German).

Notation and Sight Reading.—Music notation and reading will be taken up as soon as the children can be made to feel the need for recording what they have sung. This work will not enter into the first grade.

Melodies.—The children in both classes will be encouraged to make original melodies as often as they show a spontaneous inclination toward it. Recording these melodies will furnish opportunities for the exercises in using staff-notation.

Listening to Music.—A large part of children's musical training must come through listening to the best music, well given. For this reason there will be a time set apart each week in which the children will sing for others as soon as they have something to offer, and in which others will sing to them.

Exercises.—Vocal exercises and breathing exercises will be given incidentally when they seem to be needed. Rhythmic exercises will be given in play forms to the younger children. Exercises in intervals and in rhythm will grow out of the songs, and help to form clearer ideas of pulsation and pitch.

Physical Training for Primary Grades

Caroline Crawford

I. Measurements. 1. Growth.—Aim: To stimulate the child's desire for an active, supple body.

2. Strength Tests.—Aim for Child: To develop the idea of the strength of the materials of the body.

Aim for Teacher: A guide to show the effect on the child of the work that is given.

II. Practical. 1. Exercise for position and development.

2. Games and plays.

For first and second grades, dramatization of Mother Goose; primitive folk plays.

For third and fourth grades, Greek sports and games.

3. Dancing, calisthenics and dancing games for development of rhythm and co-ordination.

Program for the Summer School Kindergarten

Anne Elizabeth Allen

In the preparation of a Kindergarten program the first consideration must be the needs of the individual child in relation to the community. Then the immediate surroundings must determine the course to be pursued in order to bring about the best conditions for work. Therefore, as the season, together with the large park and lake adjacent to our Summer School, directly dictates our work, we shall spend most of our time in the open air. The schoolroom will be reserved merely as a place for assembly and organization, and for work on unpleasant days, in preparing toys for outdoor sports and giving expression with suitable materials to the ideas that have crowded upon us in our outdoor experiences.

In order to make field work really delightful, we need large materials and freedom of action, while at the same time the necessity of a law which every member of the community must obey, becomes more obvious just because of the greater liberty.

Also, with such an abundance of material, it seems necessary to select a unifying center around which to group all work—and the thought of *interdependence* as shown in the natural conditions around us will be selected.

Beginning with games chosen by the children themselves, directed and modified only in such ways as seem best, we shall add such games as will strengthen through dramatization their conception of our surroundings.

The zoölogical garden in the park will offer abundant opportunity for a close observation of the characteristics and habits of the animals exhibited there in almost a natural condition. The park with its trees, plants and flowers, and the lake with its sandy beach, will offer us an inexhaustible field of interest.

For the first two weeks we shall devote most of our time to the observation of the animals chosen by the separate groups of children, watching their daily habits, while constructing their homes of large blocks, or in the sand, and improving them as the inventive genius of individual children may dictate.

We shall study the needs of the herbivorous animals especially, noticing their movements, and through song, story, and dramatic representation emphasize their relation and value to man and their dependence upon their surroundings.

For the next two weeks our attention will gradually turn from the animals to the plants, trees, and flowers; to the life of the birds and insects, and to the planting in our own gardens, in individual boxes or pots, the seeds of common plants.

Close attention will be given to the care of these plants, and we shall watch how those we see in the park are cared for, and what they need for their nourishment, pointing out as we do so the relation and interdependence of man and the vegetable kingdom.

The beauty of the colors and their blending, as well as the form and symmetry of the parts of the flowers, will be dwelt upon in order to direct attention to the æsthetic value of them in their surroundings, and to the culpability of those who destroy or take them from their natural environment without purpose. Purposeless destruction of flowers will occur no doubt, and will

best be met and corrected through stories which emphasize the usefulness of the flowers in their æsthetic relations.

The remaining two weeks will be spent at the lake shore, playing in the sand, sailing boats of our own construction, watching the work of the waves, the changes of color on the water, and investigating the value of this great body of water to the plant and animal life near it.

Thus the unifying of the whole work will come about through relating this great agent of life to the fertility of all the surrounding country.

The materials used will be:

Large blocks that the children may carry about in small wheelbarrows or in their arms, clay, water-color paints, sand, blackboards, garden tools, scissors and paper, and cord for jumping-ropes.

Games: romping, imitative, and directed games; dramatization of songs or stories; free plays with toys made by the children, rhythmic games and marching (on cool days only).

Songs appropriately chosen from song books by Eleanor Smith, Patty and Mildred Hill, Jessie Gaynor, and Mrs. Riley; Walker and Jenks, Neidlinger, etc.

Stories—From any source most useful.

Round Table Discussions

Under the Department of Applied Pedagogy there will be two round table periods a week.

1. For one afternoon hour each week the students will be given an opportunity of meeting the teachers of the Model School. It is desired that these meetings be as informal as possible, as their sole purpose is to answer questions and explain the work observed.

This period will be free to all students interested in the Model School.

2. During the other round table period various teachers, in separate classes, will present each a series of six lessons upon a given subject, as outlined below.

All students taking four courses will be admitted to any one of these classes, but they are requested to attend regularly the class first selected, the lessons being so related that each one is dependent upon the others of the series.

Series of Six Lessons upon Order and Management

Katharine Stilwell

THESIS.—The teacher's ideal of order is limited by his ideal of education. As the old ideals of education are modified, different standards of order and different methods of school management must prevail.

I What is Education? What is Order? Relation of order to the ideal of education as illustrated by various schools. 1. Hyde Park High School. 2. John Crerar School. 3. University Elementary School, etc.

II. Self-Government.—Is it possible? Relation of privilege to responsibility. Liberty vs. license. Rules. What and who shall make them. Rewards and punishments. The motive of the pupil. The teacher's function.

III. Order as Related to:—1. Observation. 2. Comparison. 3. Reflection. 4. Action.

IV. Relation of Order to the Various Subjects of Study:

1. Nature study and geography. (a) Field work. Preparation. Order in the field. Use of material collected. Expression. (b) Laboratory. Grouping for work. Directions for work. Amount of noise. Care of laboratory.

2. History and civics. What the government of nations may illustrate. Civics used as an aid to self-government. The industrial life of the community and its relation to the order of the schoolroom. Excursions. How to conduct them.

3. Literature and reading. What determines the selection? Effect of dramatic reading. (a) Upon the emotions. (b) Upon orderly expression of the emotions. (c) Upon thinking. (d) Upon doing.

4. Power of music. (a) Brings about harmonious emotion and actions. (b) Selection of songs in their relation to thought. Relation to subjects of study.

5. Expression. Necessity for its use. Kinds. Acquirement of skill. Preparation and care of material used. Order of conducting such exercises.

6. Gymnastics. In relation to order. Military discipline. Effect of co-ordination upon children.

V. The Daily Program.—Proportion of time allotted to the different subjects of study. The difference between a flexible program and a fixed one. Grouping of pupils. Basis of promotions.

VI. Responsibility.—Each for all and all for each. Care of personal and public property. Housekeeping. Hygienic and æsthetic condition of school premises and neighborhood.

VII. Relation of the School to the Community.—Parents' receptions. Children's parties. School entertainments, clubs, etc. The teacher as a citizen of the community.

Series of Six Lessons on the Study of Textile Fabrics

Clara I. Mitchell

With Notes and References for Teachers

I. Study of Samples of Textile Fabrics.—Classification with regard to use: carpets, upholstery, overcoatings, cloakings, men's suitings, women's dress material, cotton fabrics, narrow webs, gauzes, plain lines fabric, household linens, silks, velvets, and laces. Fitness for use dependent upon kind and quality of material, manufacture, weight warmth, absorptive power, design, color, and cost.

Tests for Textile Fabrics.—Ignition: Boiling with caustic soda. Boiling with mercurous nitrate. Boiling with nitric acid. Immersing in mixture of sulphuric and nitric acid, then washing. Moistening with stannous chloride solution, drying and heating. Treating with solution of sodium plumbite.

Tests for Differences between Cotton and Linen.—Immersing in concentrated sulphuric acid for two minutes, washing with water and ammonium hydrate and drying. Treating with alcoholic solution of madder. Treating with alcoholic solution of madder cochineal. Immersion in olive oil. Treating with alcoholic solution of rosolic acid, then with concentrated ammonium hydrate. Iodine and sulphuric acid solution. Ammoniacal solution of copper salts.

II. Qualities to be Considered.—Length of fiber, adaptation to spinning and weaving, strength, evenness, soundness, durability, fineness, springiness, luster, susceptibility to dyes.

II. Qualities Dependent upon Condition of Culture.—Study of soil, climate, care, and industrial conditions suited to the highest culture of (1) wool, (2) silk, (3) linen, (4) cotton, (5) hemp, (6) jute, (7) ramie.

Areas of production of each. Markets. Centers of manufacture. Transportation. Indoor culture of flax and cotton plant. Raising silkworms for study. Excursions to sheep farms. Pictures of sheep ranches; shearing. Flax and cotton growing. Silk culture. Hemp, jute, and ramie culture.

IV. Manufacture.—All textile fabrics made by the interlacing of threads. Simplest process probably. Basket weaving as invented by primitive man. Discoveries growing out of necessity and accident. Probable steps to be followed out by children; mat weaving of rushes and twigs; beating of bast fibers for clothing; use of flax plant; discovery of fiber; making thread of fiber; thread of wool; invention of primitive spindle and distaff; use of frames for holding warp; modification of needle into shuttle; use of comb; invention of harness or heddles; gradual perfection of loom. Perfection of spinning machinery from spindle and distaff, hand cards and wheels to complicated carding and spinning machinery. Excursions

to mills and factories. Pictures. Collections of fibers, process cases. Models of machinery invented by children or imitated by them.

V. Present Process of Manufacture Compared with Primitive Beginnings and Intermediate Steps.—Wool: Sorting, scouring, bleaching, teazing, burring, mixing, oiling, carding (in case of worsted), spinning, dyeing, weaving, finishing. Silk: Reeling, twisting, discharging, weaving, bleaching, dyeing of standard cocoons; spinning of inferior cocoons into "spun silk." Cotton: Ginning, baling, picking, lapping, carding, spinning, dyeing, weaving, boiling out, bleaching. Linen: Retting, drying, grassing, bleaching, breaking, scutching, scraping, spinning, dyeing, weaving. History—Textile skill and knowledge of neolithic man. Lake dwellers, North American Indians, primitive races of Africa and Polynesia of the present time. Ancient Egypt, Greece, Peru, Mexico, India, Persia and China. Mediæval tapestries. Gobelin tapestries. Modern textile fabrics, characteristic of England, Scotland, Ireland, France, United States, and the Oriental countries. Visits to shops, museums, libraries, Art Institute.

VI. Weight. Study of Yarns.—Examinations of single count yarns, two-ply and three-ply. Sense tests in judgment of counts. Adaptation of different counts to different uses. Dyeing of yarns for use in weaving. Natural dyes; turmeric, orchil, cudbear, indigo, fustic, redwoods, cochineal, madder. Extract obtained by boiling for one hour in water. Formula for use of turmeric, 4% (of weight of yarn) sulphuric acid and 20% Glaubers salts dissolved in water at 160° F.; skein to be entered and worked in this bath at same temperature for 45 minutes. Washed after dyeing. Cochineal dissolved in water and used directly. Cudbear, orchil, indigo extract, prepared as above; skein to be boiled for 20 minutes, then washed.

Redwoods and madder dissolved with 3% of bichromate of potash; cooled to 160° F., 1½% of cream of tartar added; skein entered and boiling point reached in 30 minutes; boiled for one hour.

Wool Dyes.—Prepared as above in case of turmeric. Skeins entered at 160° F., boiling point reached in 20 minutes. Boiled from 20 to 30 minutes.

Names of dyes and manufacturers:
Pierie acid, yellow, Pickhardt & Kuttroff.
Fast yellow, Pickhardt & Kuttroff.
Orange, Nos. 1, 2 and 3, Sykes & Street.
Milling red, Matheson.
Fast red, Sykes & Street.
Crystal 6 R., scarlet, Matheson.
Victoria blue, Pickhardt & Kuttroff.
Acid violet, blue, Pickhardt & Kuttroff.
Formyl violet, blue, Matheson.
Malachite green, Sykes & Street.
Fast acid, green, Elberfeldt.
Naphthol black, Matheson.
Acid magenta, purple, Read, Holiday & Co.
Wool to be thoroughly wet before dyeing.

Cotton Dyes.—Bath prepared with 15% common salt and from 2 to 4% dye.

Benzo purpurin 4 B., red, Elberfeldt.
Diamine scarlet 3 B., red, Matheson.
Theo flavin S., yellow, Pickhardt & Kuttroff.
Diamine yellow, Matheson.
Mikado orange, Muhlheim.
Benzo azurin, blue, Elberfeldt.
Diamine violet N., Matheson.
Mikado brown G., Muhlheim.
Diamine bronze, brown, Matheson.
Union black, Matheson.
Diamine green, Matheson.
Berlin aniline dyes for both wool and cotton.

Cotton to be thoroughly wet before dyeing and kept wet till entered into bath. Wetting accomplished by boiling in water, or water and small quantity of caustic soda. Better method: Soak for five minutes in hot water to which has been added fankhausine (1c.c. to every pint of water used.)

NOTE.—Fankhausine to be bought of Nashoba Mfg. Co., Boston.

Mixed, compounded, and lightly dyed colors best for use.

Proposed course in sewing: To embrace only such articles as are needed and used in the children's daily life.

Dust cloths, wash cloths, towels, caps, aprons, napkins, desk covers, sewing bags, book bags, book covers, iron holders, stove holders, hot-dish holders, oversleeves, pen wipers, curtains, sheets and pillow cases for the playhouse. Clothing for dolls for use in games, plays, or history lesson. Garments for children.

Teaching of technique of sewing as work demands it. Stitches, use of utensils and proper habits taught only as need arises, not as isolated drill. All patterns to be discussed, planned, and drawn. Steps to be observed and taught as needed: Proper position of body in sewing, correct holding and using of

tools, basting, hemming, plain machine stitching, over-casting, over-seaming, running, back-stitching, half back-stitching, plain fell, French fell, gathering, darning, patching, button-hole making, gusset-making, feather-stitch, hem-stitch.

Embroidery stitches: Cross stitch, split stitch, outline stitch, button-hole stitch, rope-stitch, French knot, chain stitch, herring-bone stitch, satin stitch, darning, embroidery stitch, couching.

BOOKS FOR REFERENCE.

Textiles: *Textile Chemistry*, J. Merritt Matthews, Philadelphia Textile School; *Woolen and Worsted Cloth Manufacture*, Roberts Beaumont; *Mechanism of Weaving*, T. W. Fox; *Elements of Cotton Spinning*, Morris & Wilkinson; *Cotton Weaving*, Richard Marsden; *Weaving*, Posselt; *Cotton Spinning*, Nasmith; *Cotton Spinning*, Taggart; *Cotton Spinning*, Brooks; United States Government Bulletin, No. 33, *The Cotton Plant;* United States Government Reports on *Useful Fibres; Flax*, Peter Sharpe; *Silk*, Jonathan Ruegg; *Instruction Book in the Art of Silk Culture*, Women's Silk Culture Association of United States; *Silk and Silk Dyeing*, Hurst; *Structure of Wood Fibre*, Bowman; *Embroidery*, N. G. Paulson Townsend; *Textile Dyeing*, Berlin Aniline Works, Philadelphia; *The Textile Industries*, William R. Bagnall; *Dyeing of Textile Fabrics*, Hummell.

Reports of United States commissioners to the Paris Exposition, 1878, Vols. I. and III.; Smithsonian Report, No. 6; *Oriental Carpets*, Royal Museum, Austria.

History: *Primitive Culture*, Tylor; *Early History of Man*, Tylor; *Man before Metals*, Joly; *Great Paces of Mankind, Woman's Share in Primitive Culture*, C. T. Mason; *Lake Dwellings of Switzerland and Other Parts of Europe*, Keeler; Encyclopedia Britannica, Textiles, Tapestry, Weaving Rugs.

NOTE.—The syllabus of Miss Mitchell's work in color and design in Textile Fabrics will be found under the Department of Art.

Kindergarten Round Tables

Anne E. Allen

These round tables will be divided into two sections, one for the discussion of the work with the children as observed in the morning kindergarten; the other for the playing of games in order to discuss, if possible, the best plays for little children. Under the first section, such headings as the following may be suggestive in leading to the most helpful discussion:

1. Social value of such plays and games as have been observed.
2. Whether value is direct or indirect; vital or otherwise.
3. Effect upon character of such work.
4. Has it an end worth striving for?
5. Free plays vs. prescribed plays.
6. Disciplinary value of games.
7. Question reasons for order of occupations, form of presentation, and educative value.
8. Shall we follow the interests of children, and, if so, how far? Should we ever follow their whims?
9. Shall we study the development of the children themselves or the logical sequence in presentation of the materials used?
10. Question program as a whole.

In the second section games will be played and criticised from the standpoint of their pedagogical usefulness:

a. Romping games. *b*. Unrelated kindergarten circle games. *c*. Sense games. *d*. Pantomime. *e*. Gymnastic games and rhythmic movements. *f*. Games involving dramatic expression.

Classes in French and German

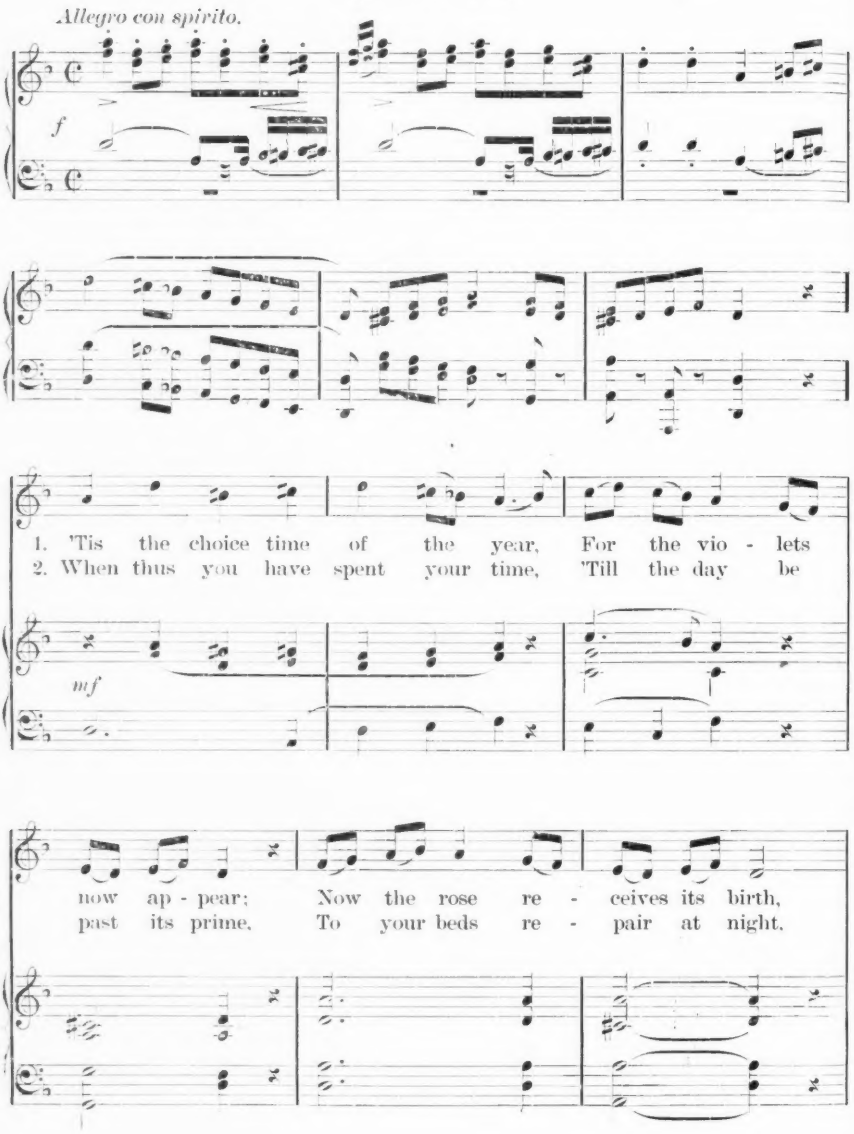
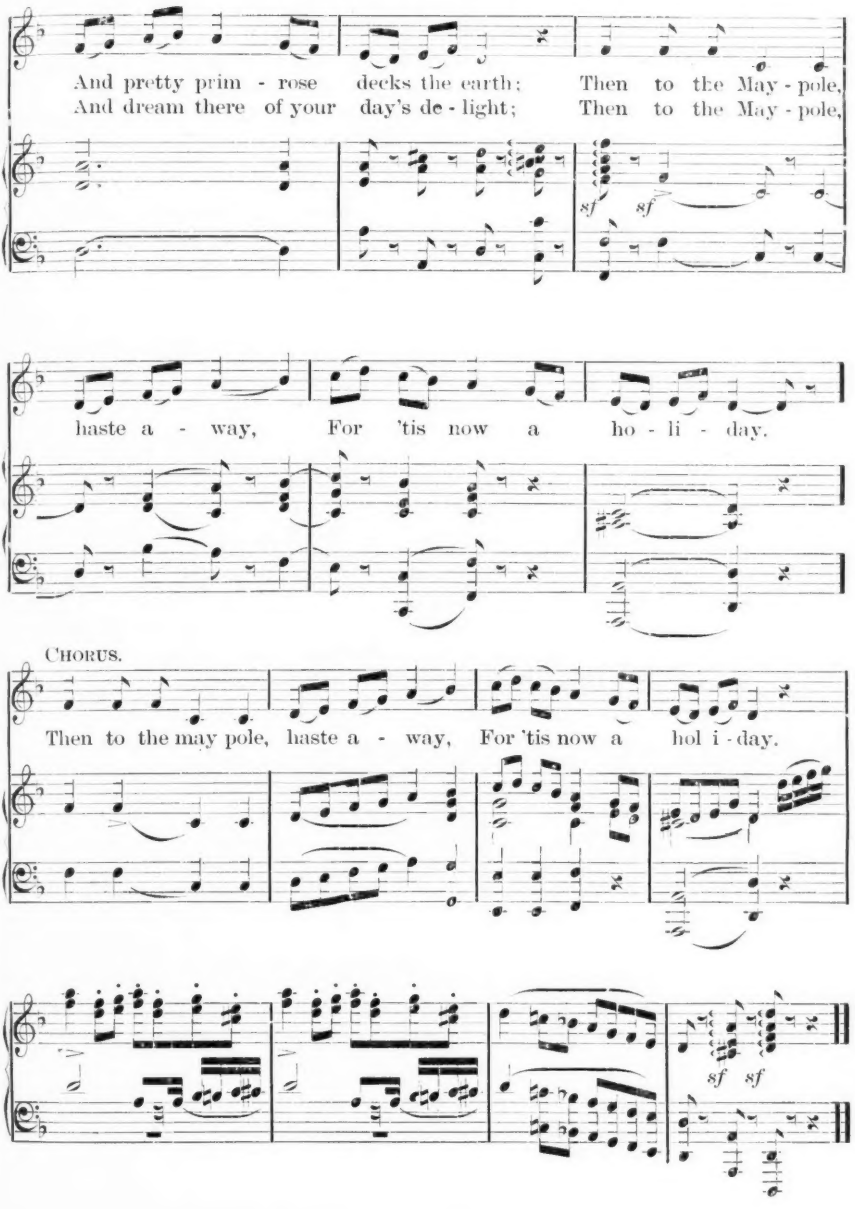
Classes in French and German will be organized if there is sufficient demand. Classes in beginning and advanced German will be conducted by Dr. Seigfried Benignus, head of the Department of German in the Chicago Institute, and the classes in French by M. Ingres, of the University of Chicago.

French. Two courses are offered.

I. The Elementary Course, for students with little or no previous training, will be conducted exclusively in French, with special attention to the spoken language. As the student progresses the elements of grammar will be taught, and written exercises will be given regularly. It is expected that at the end of this course the student will be able to understand and use ordinary spoken French and to write the language fairly well.

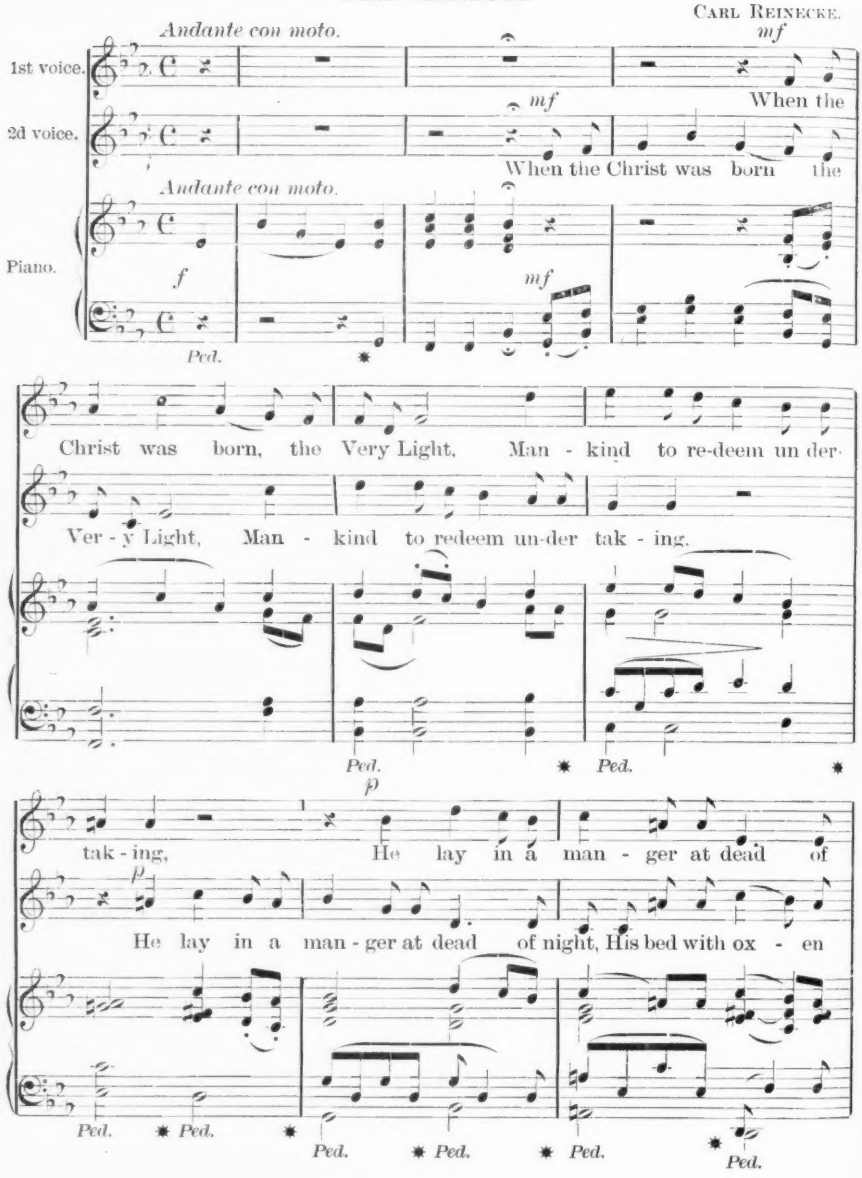
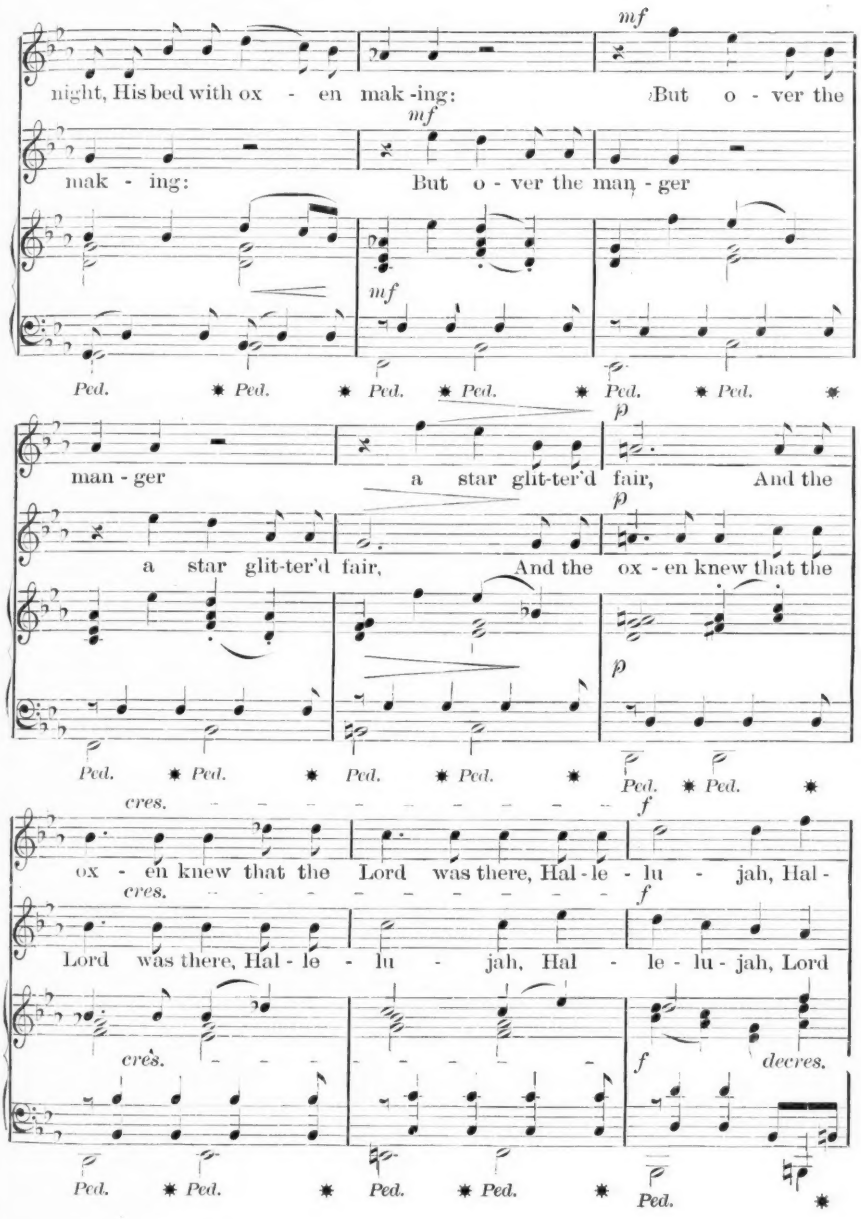
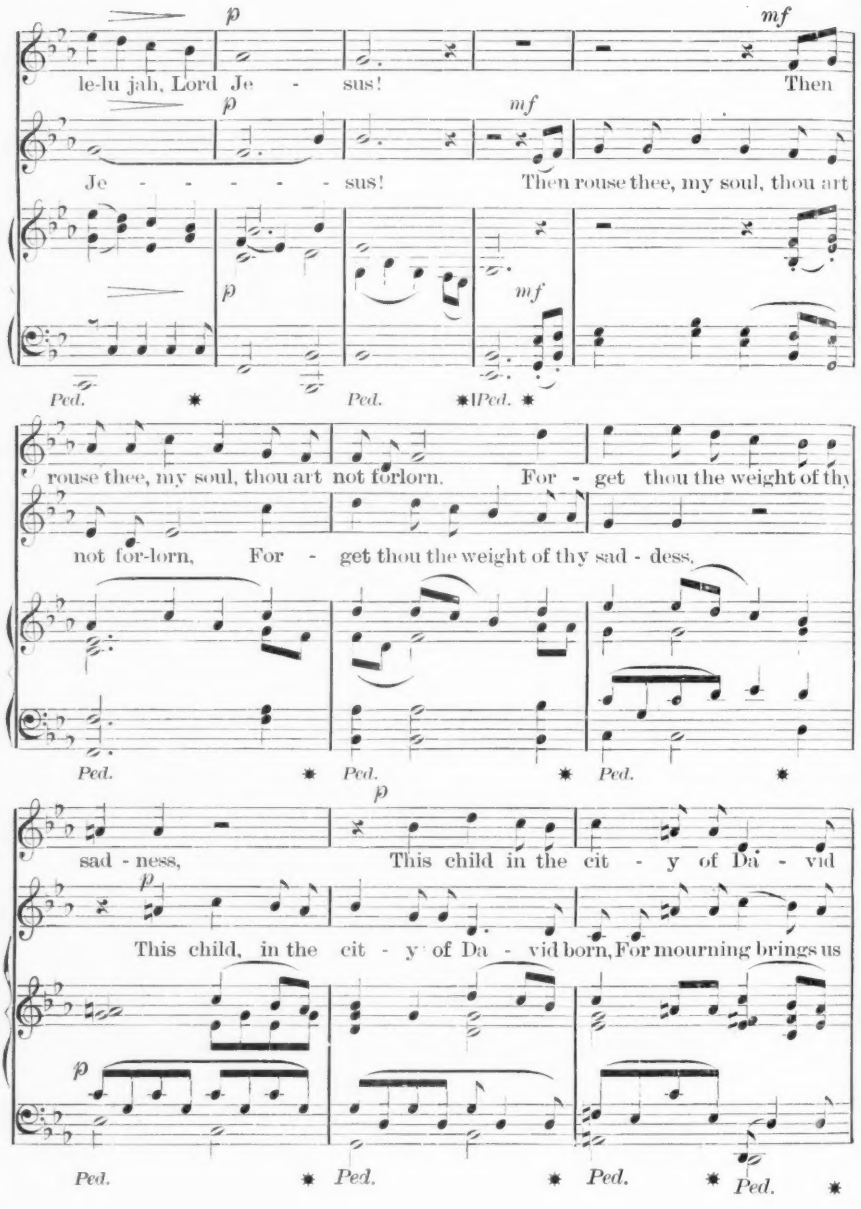
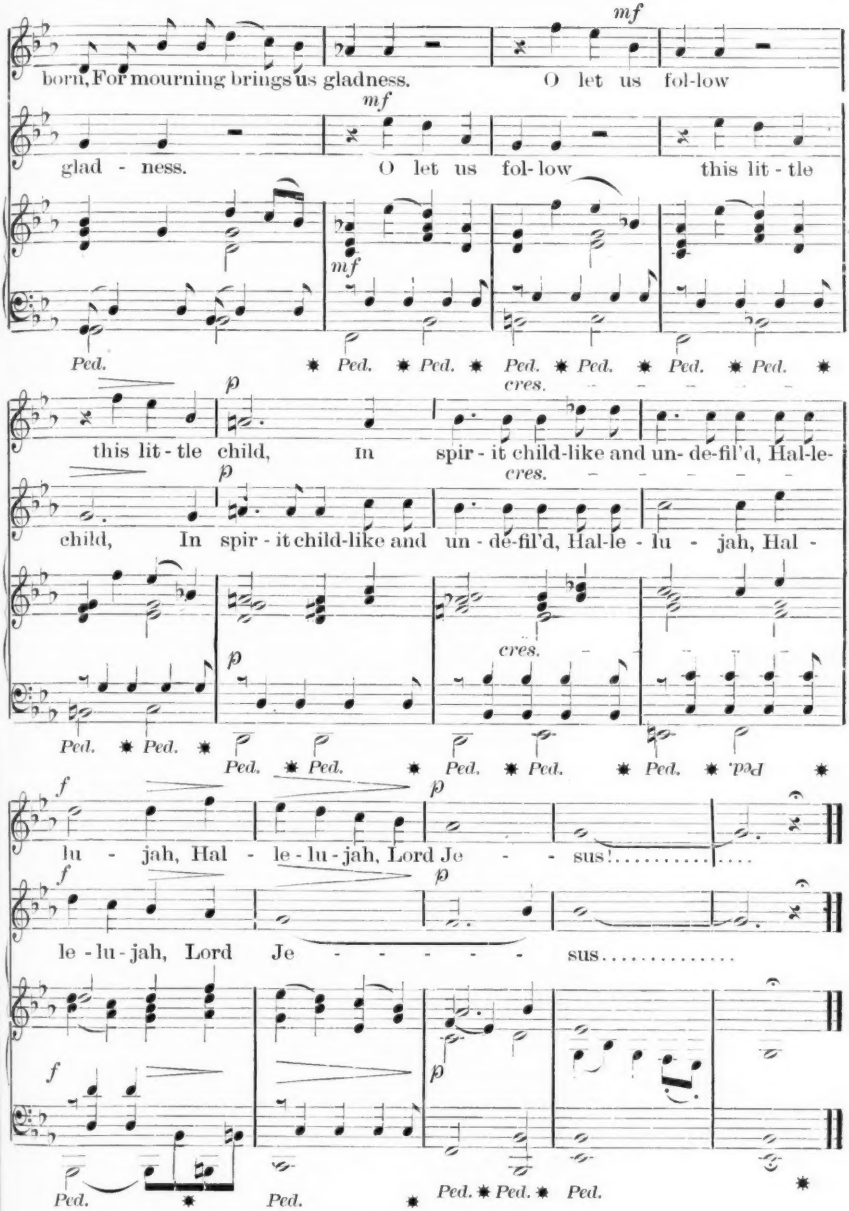
II. The Advanced Course, for students who have had at least one year's training and are able to read and understand easy French, is also conducted in French according to the Socratic method. Difficult points of grammar will be studied incidentally. The student will be made acquainted with as many authors and their works as possible. In the written exercises special attention will be given to style, and a certain amount of home reading will be expected.

TO THE MAYPOLE AWAY.

(MORRIS DANCE.)

Allegro con spirito.
f
1. 'Tis the choice time of the year, For the vio - lets
2. When thus you have spent your time, 'Till the day be
mf
now ap - pear; Now the rose re - ceives its birth,
past its prime, To your beds re - pair at night,

And pretty prim - rose decks the earth; Then to the May - pole,
And dream there of your day's de - light; Then to the May - pole,
8f 8f
haste a - way, For 'tis now a ho - li - day.
CHORUS.
Then to the may pole, haste a - way, For 'tis now a hol i - day.
8f 8f

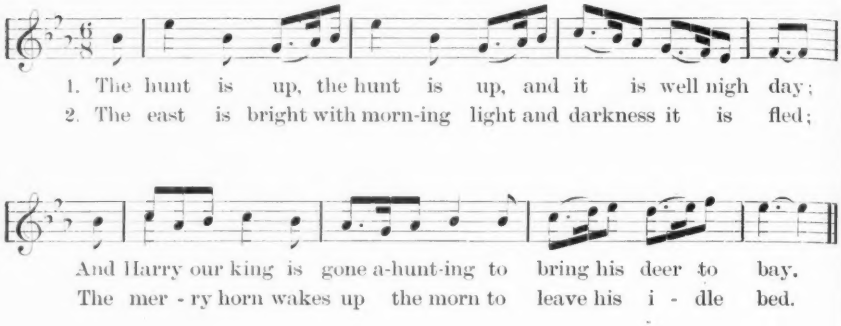
A CHRISTMAS CAROL

(CANON IN THE SECOND ABOVE)

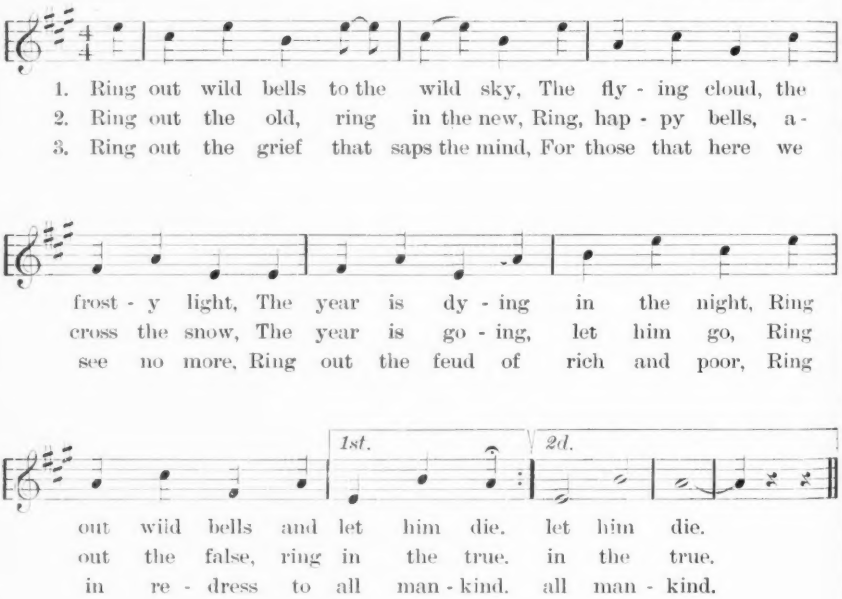
CARL REINECKE

CARL REINECKE.
Andante con moto.
1st voice.
2d voice.
Piano.
mf
When the
When the Christ was born the
f
Ped.
Christ was born, the Very Light, Man - kind to re-deem un der-
Ver - y Light, Man - kind to redeem un-der tak - ing.
p
tak - ing, He lay in a man - ger at dead of
He lay in a man - ger at dead of night, His bed with ox - en

night, His bed with ox - en mak-ing:
But o - ver the
mak - ing:
But o - ver the man - ger
man - ger
a star glit-ter'd fair,
And the
a star glit-ter'd fair,
And the ox - en knew that the
ox - en knew that the Lord was there, Hal - le - lu - jah, Hal -
Lord was there, Hal - le - lu - jah, Hal - le - lu - jah, Lord
Ped.

le-lu jah, Lord Je - sus! Then
Je - - - - - sus! Then rouse thee, my soul, thou art
rouse thee, my soul, thou art not forlorn. For - get thou the weight of thy
not for-lorn, For - get thou the weight of thy sad - dess,
sad - ness, This child in the cit - y of Da - vid
This child, in the cit - y of Da - vid born, For mourning brings us
Ped.

mf
born, For mourning brings us gladness. O let us fol-low
mf
glad - ness. O let us fol-low this lit - tle
mf
Ped. * Ped. * Ped. * Ped. * Ped. * Ped. * Ped. *
p
cres.
this lit - tle child, In spir - it child-like and un- de-fil'd, Hal-le-
p
cres.
child, In spir - it child-like and un - de-fil'd, Hal-le - lu - jah, Hal -
p
cres.
Ped. * Ped. * Ped. * Ped. * Ped. * Ped. * Ped. * Ped. *
f
p
lu - jah, Hal - le - lu - jah, Lord Je - - sus!.....
f
p
le - lu - jah, Lord Je - - - - - sus.....
f
p
Ped. * Ped. * Ped. * Ped. * Ped. *

THE KING'S HUNT IS UP.

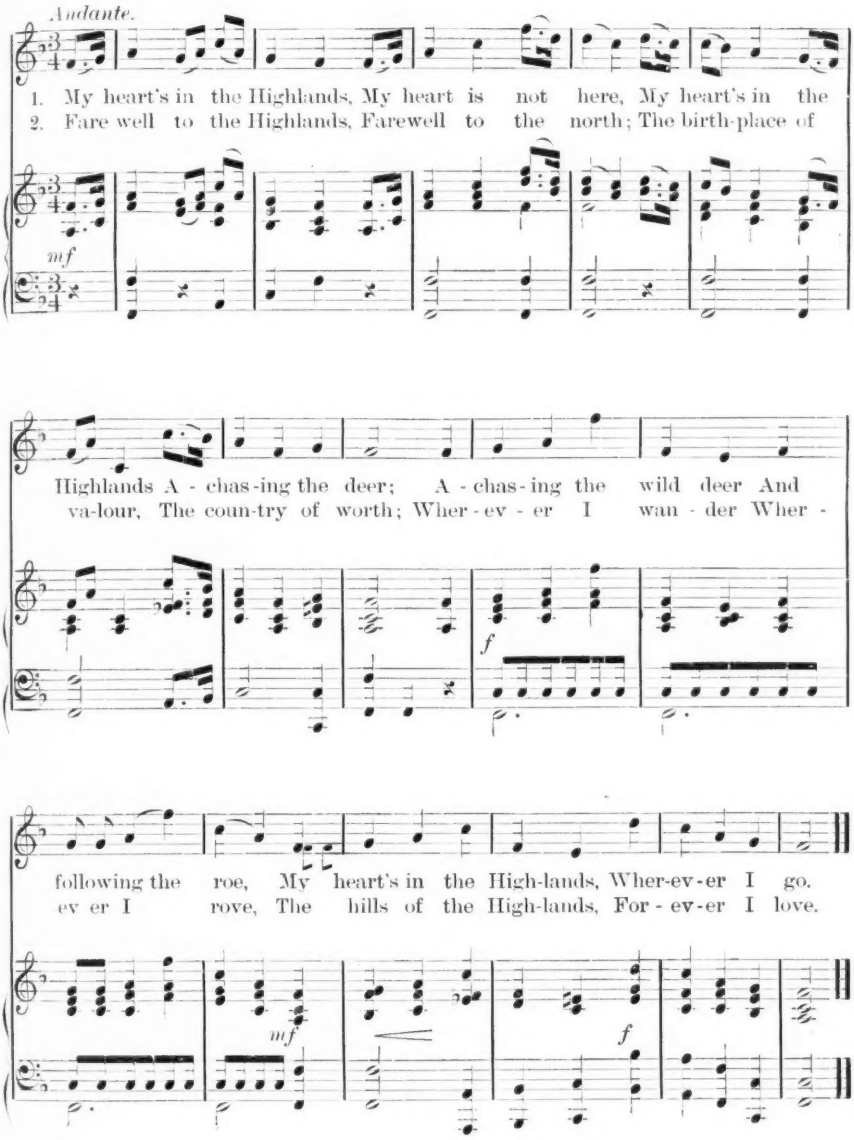
OLD ENGLISH.


1. The hunt is up, the hunt is up, and it is well nigh day;
2. The east is bright with morn-ing light and darkness it is fled;
And Harry our king is gone a-hunt-ing to bring his deer to bay.
The mer - ry horn wakes up the morn to leave his i - dle bed.

RING OUT, WILD BELLS.*

TENNYSON. W. W. GILCHRIST

1. Ring out wild bells to the wild sky, The fly - ing cloud, the
2. Ring out the old, ring in the new, Ring, hap - py bells, a -
3. Ring out the grief that saps the mind, For those that here we
frost - y light, The year is dy - ing in the night, Ring
cross the snow, The year is go - ing, let him go, Ring
see no more, Ring out the feud of rich and poor, Ring
1st.
2d.
out wild bells and let him die. let him die.
out the false, ring in the true. in the true.
in re - dress to all man - kind. all man - kind.

*From SONGS OF LIFE AND NATURE. Scott, Foresman and Co.

MY HEART'S IN THE HIGHLANDS.

Andante.
1. My heart's in the Highlands, My heart is not here, My heart's in the
2. Fare well to the Highlands, Farewell to the north; The birth-place of
mf
Highlands A - chas-ing the deer; A - chas-ing the wild deer And
va-lour, The coun-try of worth; Wher - ev - er I wan - der Wher -
f
following the roe, My heart's in the High-lands, Wher-ev-er I go.
ev er I rove, The hills of the High-lands, For - ev-er I love.
mf
f